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THE TREND OF ADVANCE IN TOWN PLANNING AND CHILD WELFARE WITHIN THE EMPIRE

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*Appointed by the Dominion Government to attend the Imperial Health Congress in
London, under the Auspices of the Victoria League, May 18 to 24, 1914.*

Report Submitted to the Prime Minister

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THE Victoria League was founded in London in 1901 as an organization of British men and women in memory of Her Majesty the late Queen Victoria, for the purpose of promoting closer union between British subjects living in different parts of the world. Wholly unassociated with party politics*, it has stood for "a sober imperialism of national responsibility," and one of its main objects has been the collection and distribution of information throughout the Empire of matters bearing upon social service. As there can be no Empire without a race capable of sustaining worthily its many obligations so—to quote the preface of the Transactions of the Congress about to be published—"national health is obviously one of the first considerations which must arrest the attention of all who value the wider citizenship of the various British communities."

It was with a view to the creation of a right public opinion on topics of common interest that the League organized the Imperial Health Conference and Exhibition of 1914, that an exchange of knowledge might be secured valuable for all countries

concerned, for the Mother Country as well as for the Dominions and dependencies. That the scope of the discussions be not too wide, and the value of the Congress be not impaired by diffuseness, and that there might be a deliberate thoroughness in the proceedings of the Congress, two aspects of national health alone were made the subject of communication and debate, namely, Town Planning and Child-welfare.

To this end the Congress was convened at the Imperial Institute for Monday, May 18th, and the following days, under the Presidency of the Countess of Jersey. Delegates were present from the Governments of the Commonwealth of Australia, New South Wales, Victoria, Queensland, Western Australia, and Tasmania, of New Zealand, the Union Government of South Africa, the various Crown Colonies of British Guiana, Hong Kong, etc., from the provincial governments of Alberta, British Columbia, Ontario, and Saskatchewan, as well as from the Dominion Government. Great Britain afforded numerous delegates from county councils, district councils and boroughs, together with representatives

*Its Vice-Presidents include Mr. Asquith, Mr. A. J. Balfour, Mr. Bonar Law, Earl of Cromer, Earl Curzon, Viscount Milner, the Archbishop of Canterbury, the Duke of Norfolk, and the Moderators of the Church of Scotland and the United Free Church of Scotland.

from national and local associations directly interested in the subjects of the Congress; and others from the different branches of the Victoria League in the United Kingdom and over the seas.[†] The Congress was under the patronage of Their Majesties, whose message of welcome and congratulation was read by the President prior to the formal opening of the Congress by the Secretary of State for the Colonies, the Rt. Hon. Mr. Lewis Harcourt. Mr. Harcourt's powerful address was followed at other sessions by other opening addresses delivered by Lord Bryce, Mr. Henry Vivian, M.P., well-known here in Canada in connection with the Town-planning Movement; the Rt. Hon. Herbert Samuel, President of the Local Government Board; Principal Hadow, of Armstrong College, Newcastle-on-Tyne; the Rt. Hon. Sir William Anson, ex-President of the Board of Education; Lord Robert Cecil, and Viscount Peel, Chairman of the London County Council. The conference was brought to a close by two stirring speeches from Sir Edward Cook and Mr. Lewis Harcourt.

The general feeling of those attending the Conference seemed to be one of profound satisfaction that social problems of the greatest importance were being adequately considered by a large number of people, and that the spirit of the discussions was far removed from any narrow or partisan political spirit. It was also felt that work done by early and late Victorian and Edwardian Sanitary Reformers was beginning to bear fruit.

What particularly impressed your delegates was the value of the exposure and discussion of methods employed in the different parts of the British Empire towards solving common problems of Child Welfare and city life. The same problems confront us, whether we live in Canada, the British Isles, Australia, or Africa; we have like methods of government; are largely one people; nevertheless dwelling apart, and with differing surroundings there is frequently a distinct individuality in the attempted solutions of the different problems in the different portions of the Empire, and valuable suggestions are thereby afforded for lines of successful legislation.

In the following paragraphs we beg to call attention more particularly to measures which, employed in one or other portion of the Empire, and brought to the notice of the Congress, merit the favorable consideration of your Government and the people of Canada.

Town Planning.

The Town Planning campaign in Great Britain has been followed with much interest here in Canada, and the writings of the leaders of that campaign, of men like Henry Vivian and Raymond Unwin, are so well known and have so fully covered the ground, that there is little that was absolutely new that could be brought before the Congress. It is well, however, to call attention to the far-reaching effects of the recent town planning legislation in Great Britain, based, as it is, upon the principle that any large commercial centre must be regarded as the cause of the development of the surrounding suburbs; must therefore be permitted to be dominant over them and be empowered to determine the "lay out" of the surrounding districts as regards not merely the lines of the main arteries of communication, but also as regards the situation of factory sites, etc. Mr. John Burns' Housing and Town Planning Act came into force in 1910. "Already," to quote from Mr. Henry Vivian, "we are aware that 191 local authorities are proposing town planning schemes for part or the whole of their areas, and 224 schemes are under way. Of these, about one-third (the precise number is 83) are before the Local Government Board in various stages of their elaboration. These 83 schemes cover an area of not less than 127,000 acres. If the remaining schemes which have not yet reached the Local Government Board, but are in process of incubation in the localities, cover a proportionate area, then the whole area of this country which is about to be placed under town planning regulations would amount to some 300,000 acres of land. If 300,000 acres of land are put under town planning schemes, and if we assume that ten houses are built to the acre, and if we assume five persons to a house, or fifty people to the acre, that would mean that we should have

[†]While the Victoria League has numerous local branches in Australia, New Zealand, and South Africa, it has found that in Canada and Newfoundland the Daughters of the Empire possess to a large extent similar objects and ideals, and thus has wisely made no attempt to enter this field and duplicate their work.

in those 300,000 acres a housing accommodation for 15,000,000 people, which would provide amply for the growth of population for a good many years to come."

The striking improvement already to be noted in the surroundings of the industrial cities and towns of England, due to this, Mr. John Burns' Act, and also to the Town Planning Campaign, renders it obvious that if we, in Canada, do not want to lag far behind, each of our Provinces in the near future must undertake legislation along the same lines.

On Town Planning Commissions.

It is of interest to observe that Australia, in the examples of Adelaide, the capital of South Australia, and of Canberra, the new federal capital, exhibits the earliest modern (1836) as also the latest example of deliberate town planning. At Adelaide, however (as at Washington, U.S.A.), the increasing value of land in the suburbs of the growing city, and the influence exerted by the land speculator, have brought about that the original plan is being put at one side to the grave injury of the beauty and health of the city. To quote Canon Hornabrook's paper, "So much per foot has been dearer to us than sunshine, light, and air. The narrowest streets were not narrow enough; the smallest allotments were not small enough, and out from the streets we formed out 'places,' and off from our places we formed our 'courts.' There was no Town Planning Act to stop us; and to-day in our city beautiful, men and women and children dwell in houses which are low and damp, crooked, and unhealthy, the very courts they are planted in blocked at the ends with higher buildings until it is impossible, even if the houses be made dry and convenient, to get a current of fresh air through." . . . The very park lands have not been sacred, as government after government has taken slice after slice for public purposes, until the frontage of the whole length of one terrace has been filled up, shutting out the beautiful view of the Torrens Valley. The boundary to the city area, made by park lands, has, in the absence of enlightened legislation, enabled private owners to enrich themselves at the expense of the worker, and increased rents have meant the taking in of lodgers and boarders and the subdividing of houses be-

tween families, until we have the beginning of a state of things which ought to be foreign to a new country."

What is obviously essential is the establishment in each state or province of a permanent commission, having charge of the lay-out of cities. These are matters that cannot safely be left to the mercy of short-lived corporations and parliaments.

The Workers' Dwelling Act in New Zealand.

We would call your attention to a suggestive communication by the Hon. T. MacKenzie, High Commissioner of New Zealand, upon the legislation in that Colony designed to enable workmen to obtain houses at reasonable rentals. The Acts of 1905 and 1910 respectively, provided for the setting apart of Crown Land, and purchase of such other land as the Minister of Labor (on the recommendation of the Local Board) thinks fit for the purpose of the Act, and for the erection of buildings suitable for such dwellings, or for the conversion of buildings into workers' dwellings; the total capital value of any workers' dwelling (including land, outbuildings, etc.) not to exceed £600 (\$3,000). By worker is meant every person, male or female, employed in work of any kind, whose earnings at the time of making application do not exceed \$875 per annum. The plans are furnished by the Labor Department, the requirements of the individual applicant receiving every consideration. The dwellings of wood, brick, or concrete have an attractive appearance, and being built upon conveniently sized plots, afford every reasonable home comfort. Mr. MacKenzie's communication gives full details of the working of the Acts referred to. On March 31st, 1913, the number of houses erected under the original Act of 1905 was 126, while 138 had been erected under that of 1910, and arrangements were in hand for the erection of 76 more dwellings.

Further, by these Acts the "Superintendent of the State-Guaranteed Advances Office" is authorized to lend money for the purposes of purchasing or erecting a dwelling to any person employed in manual or clerical work, who is not in receipt of an income of more than \$1,000 per annum, and is not the possessor of land other than the allotment on which it is proposed to

build. The sum advanced shall not exceed \$2,250, nor may any advance be granted exceeding the value of the dwelling house to be erected. The advance is secured by a mortgage on the whole property. Full details are given concerning the working of the Act. The total of the advances to workers up to March 31st, 1913 was about \$11,000,000. During the year ending March 31st, 1913, the applications for loans numbered 1,805; the advances granted numbered 1,321, for an aggregate of about \$2,250,000.

Calling to mind the increasing congestion of our greater cities, the high rents demanded for artisans' dwellings, the poor accommodation afforded in the same, the increased comfort, self-respect, and civic status of the family brought about by proprietorship of a dwelling house, your delegates are of the opinion that similar legislation in Canada would be fraught with benefit.

Similar legislation has been enacted in Western Australia; its nature and results were described by Lieut.-Col. Sir Newton J. Moore, Agent General for that Province.

The False Economy of Small Lots.

Upon the face of it, the more houses the landlord can manage to erect upon his property, the greater the profit. This appears to be obvious. One of the most telling features of Mr. Raymond Unwin's address was his demonstration that this is false; and that it brings increased profit to the landowner with no increased cost to the occupier to erect half as many houses to the acre. The explanation is that with cottages closely built, as in the ordinary street, the proportion of the property laid out in roadway becomes singularly high, and the cost of road building becomes the greater part of the total cost. To quote Mr. Unwin:—

"We have been so accustomed to accept the necessity for crowding dwellings on the land in urban centres, that it has come to be assumed and to appear self-evident that the greater the number of dwellings placed on the land the greater is the economy, the greater the return to the landowner as a whole, and the cheaper will be the plot to the individual occupier. It can, however, be shown that this is far from being correct, that, on the contrary, the greater the number of houses crowded upon the

land, the higher must be the rate which each occupier must pay for every yard of it which his plot contains, and the smaller will be the total return to the owners of land in increment value, and, indeed, the less will be the real economy in the use of the land. The fact is, that the greater the number of houses erected on an acre of land, the more of that acre will be occupied by roads to give access to those houses, and the greater will be the waste of road frontage that takes place at all road junctions. The return in efficiency, by increasing the density of houses, is a constantly diminishing one; and although it is true that with land at a given value crowding houses upon the land will reduce somewhat the price of each plot, at the same time the size of the plot diminishes so much more rapidly than the price, that the cost per yard of the available land rises steadily as the number of houses increases. Let me give you one or two instances, based on diagrams, comparing the development of similar areas of land with differing numbers of houses; in each case the cost per acre of the raw or undeveloped land and the cost of roads per lineal yard are assumed to be the same. . . . Let me refer you to the particulars of a scheme of development which I came across in a Canadian city. In this case, taking the value of the land as it was, at \$1,500 per acre, and the cost of the roads as they were, all told, at \$12 per lineal foot I found that with the usual system of development adopted in this town, an area of 10 acres divided up so as to accommodate 88 houses, as shown in scheme A, gave plots containing 374 yards, costing \$514 each plot, or \$1.30 per yard. Omitting certain roads and rearranging the houses more on the lines adopted in our garden city development, and reducing the total number of houses to 68, as shown in scheme B, the average area of the plot was increased to 600 yards, and the cost of the plot was actually reduced to \$454, or .76 per yard. These unfortunate tenants were, therefore, paying in this instance \$60 per plot for the privilege of having the plot reduced by 226 yards! The explanation of this, which at first sight appears to be incredible folly, lies in the fact that in this particular town the municipality paid about three-fourths of the cost of the roads, and therefore the

DIAGRAM II.

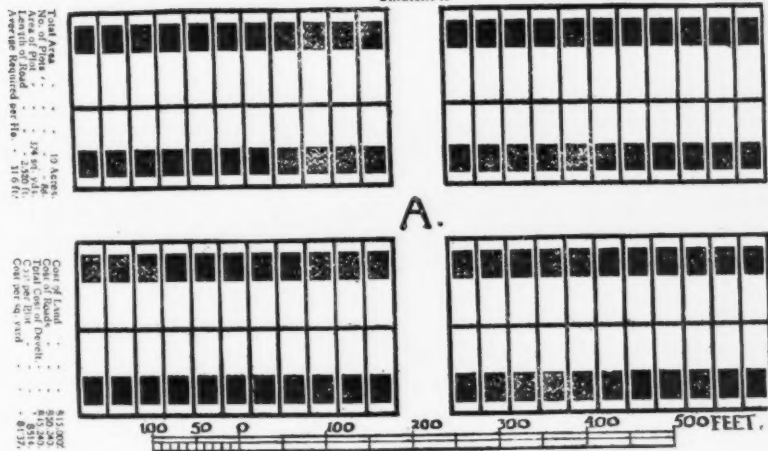
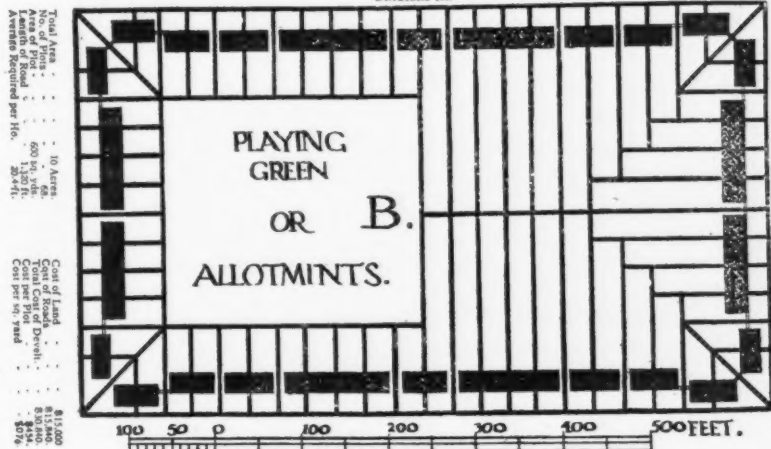


DIAGRAM III.



individual owner of the land took no notice of this cost, although, of course, it fell on the public, and wasted both land and road-making operations to the extent that I have indicated in the above figures."

It is obvious from this that the time is ripe for provincial legislation and municipal regulations, laying down a minimum limit to the size of lots intended for artisans' dwellings.

On Public Parks.

A paper that deserves notice by all communities that are interested in town-planning, was contributed by Lieut.-Col. G. T. Plunkett, who emphasizes that the park considered in the ordinary town planning, occupying one or more blocks, is not to be compared with the utilization of either side of existing brooks or streams within the town area for park purposes. Strips of suitable breadth along the course of such streams and gullies should, from the first, be secured against building, and in this way the natural countryside is retained within the limits of the city, and the park is within easy reach of a larger number of the inhabitants. "while the planting of a few trees and bushes and the very simple precautions necessary to preserve the natural features of the banks will give to town-bred children frequent opportunities not only of breathing the fresh air, but of refreshing their senses and their minds with the sights and sounds of the country as nature made it, . . . and of seeing native trees, plants, and wild flowers in the surroundings which are natural to them." Improvements to this end are already being taken up in the suburbs of London in connection with the Wandle River and Beverley Brook.

The majority of our towns have some stream or body of water in or near its boundaries, and if these be pre-empted and the community once realizes the extreme value to the city of preserving these streams and their surroundings, it would add greatly to the status and well-being of the towns. Take care of the little streams and the park question, to a very large extent, takes care of itself.

The Effects of Town-planning Upon the Health of the Community.

Lastly, we would call attention to the proved effects of town-planning, that is to

say of reasonable dwellings, abundant light, air and playing space upon the newer generation, the children of artisans. Again we quote from Mr. Raymond Unwin. Letchworth (20 miles from London), Port Sunlight (near Liverpool), Bournville (near Birmingham) are all "garden cities" established within the last few years, the homes of working men and women.

"In the year 1912, the average death rate for England and Wales was 13.3 per 1,000, the average infant mortality was 95 per 1,000. The figures for Hampstead, one of the healthiest suburbs of London, and indeed of the whole country, were: Death-rate, 9.8, infant mortality, 62 per 1,000. In Letchworth, which is an industrial town, in the same year, the death-rate was 6.1 per 1,000, and the infant mortality 50.6. At Port Sunlight, also an industrial community, the figures were: Death-rate, 7.46 per 1,000, and infant mortality 81.39. At Bournville, taking an average of five years ending 1910, the death-rate was 5.7 per 1,000, and the infant mortality 62.4. On the Hampstead Garden Suburb, a purely residential community, the death-rate in 1912 was 3.8 per 1,000, and the infant mortality 11.2—figures, the unusual lowness of which is probably due to some special selection of the new residential population, but figures which open up a vista not often realized of the possibilities of healthy life in a well-ordered community.

It is only necessary to see the children turning out of the schools in these new communities to realize how superior they are in health to the children who come from the more congested districts of our towns; but the improvement is not merely in looks and conditions; we find that in actual measurement the children are better grown and better developed, as the following figures, comparing the children in the Bournville school with those in the Floodgate Street school, situated in one of the least sanitary areas of Birmingham, show:—

Weight in lbs., Boys.	Years of Age.			
	6	8	10	12
Bournville	45.0	52.9	61.6	71.8
Floodgate Street . . .	39.0	47.8	56.1	63.2
Weight in lbs., Girls.				
	6	8	10	12
Bournville	43.5	50.3	62.1	74.7
Floodgate Street . . .	39.4	45.6	53.9	65.7

Height in Inches, Boys.

Bournville	44.1	48.3	51.9	54.8
Floodgate Street...	41.9	46.2	49.6	52.3

Height in Inches, Girls.

Bournville	44.2	48.6	52.1	56.0
Floodgate Street...	41.7	44.8	48.1	53.1

CHILD WELFARE.

The chief subjects brought before the Conference under the "Care of Child Life," were:—

National Care for Maternity.

This subject was presented to the Conference by Mr. Benjamin Broadbent, whose pioneer work on the prevention of infant mortality when he was Mayor of Huddersfield, has made him famous throughout the world. He pointed out the rapid development now taking place, referred with appreciation to the instruction given to those who are already mothers, and to the instruction of future mothers, as well as to the work of voluntary and municipal associations in Schools for Mothers, Babies' Welcomes, Infant Consultations, etc., and the careful supervision of the work of all midwives, and predicted still greater progress in the immediate future.

**Standards for Feeding and Nursing
Infants.**

This was brought before the Conference more than once, and seriously considered. The hope was generally expressed that the proper authorities would take up the question, but no agreement was reached as to who and where these authorities are. All are agreed as to the supreme necessity of maternal nursing, but we have no authoritative investigation or pronouncement as to (1) how often, (2) how much, the infants should be fed. Research work is greatly needed about such matters.

Maternity Benefit.

One of the plans devised to improve the condition of the mother and child is the Maternity Benefit. In England this amounts to £1.10s., and is paid to the mother. About £1,500,000 is expended in this way, but the Women's Co-operative Guild and other influential and well-informed authorities claim that it should be increased to £7.10s. One of the chief ad-

vantages obtained by this benefit is that it secures early registration of births and care and assistance for mother and child in many cases.

In Australia, in 1912, a maternity allowance of £5 was granted by a Federal Act, and in sixteen months the sum thus expended was £750,000. The working of this Act is not yet considered altogether satisfactory, but in one respect at least it is admirable, inasmuch as it has secured the registration of 90 per cent. of all births within seven days.

On the other hand, in New Zealand, no money payment is made, the assistance to the mother being in the form of skilled medical advice and general care, with hospital care, if necessary. The New Zealand Association, a voluntary association, national in its scope, has succeeded, by promoting infant hygiene and maternal care, and especially by promoting maternal nursing, and educating the mother and the general public, in saving so many babies' lives, that the infant mortality of New Zealand is lower than that of any other part of the British Empire, or, indeed, of the world. This Association was founded by, and its work has been carried on under the direction of, Dr. and Mrs. Truby King.

Infant Mortality.

No subject was more carefully considered by the Conference than that of Infant Mortality.

The highest infant mortality in any one of the 12 largest English cities was, in 1900, 200 per 1,000 births, and in 1913, 125 per 1,000 births. The average infant mortality for these cities was, in 1900, 166, and in 1913, 104 per 1,000 births.

In New South Wales, Sydney, in 1911, had a lower infant mortality than any other great city in the world—viz., 69.5 per 1,000 births, whereas in 1880-1884 it was 174 per 1,000 births.

The excellent methods and results in reducing infant mortality in New Zealand, Australia and many parts of Great Britain were set forth in several papers. It is evident that our infant mortality should be reduced to at least 100 per annum per 1,000 births, and as soon as that has been attained we should aim at 50 per annum per 1,000 births.

The Milk Supply and Infant Mortality.

No discussion on child welfare could be thought complete without a consideration of the milk supply, especially in cities. The chief paper on this subject was entitled "The Talbot Milk Institute." In it a description was given of the establishment and management of the Lady Talbot Milk Institute at Melbourne, Victoria, Australia, founded in 1908. It differs from many other milk schemes in that (1) the milk is distributed to the homes, not sent for by the purchasers, (2) ice and ice-chests are supplied, and (3) nurses are sent to see to the proper care of the baby, its weight and general health, and also to the proper care of the milk. The following are the aims of the Institute:—

1. The education of the mothers in the care and feeding of the infants, special stress being laid on the necessity of breast feeding whenever possible.

2. Absolute control of the cow's milk used in feeding infants deprived of breast milk.

3. The distribution of the milk upon a charitable basis to infants whose mothers cannot nurse their children at the breast, and are not in the position to pay the full price for a special milk for infants.

4. The provision of a guaranteed pure milk supply in Melbourne for those willing to pay the extra cost which it necessarily entails.

5. The improvement of farms and retail depots from which the ordinary milk supply of the city is distributed.

6. The care of the baby and its surroundings by skilled children's nurses employed to visit all homes where the milk is used.

The milk is sold at 4d. per pint, slightly less than cost. The reduction of infant mortality in Melbourne from 109 in 1908 to 72 in 1913 has been in some measure, at least, due to the work of the Lady Talbot Institute.

Boarding Out Infants and Children.

This plan is followed with great success in New South Wales, and is one secret of the low infant mortality prevailing there. The State Children's Relief Board, established and developed by Sir Chas. K. McKeller under The Children's Protection Act of 1894 and The Infant Protection

Act of 1902, has an Honorary Committee of Ladies in each District of Victoria, who are appointed by the Governor-in-Council, and visit every week the boarded-out children. The head of this committee is the Lady Correspondent, who reports directly to the Board. Each committee has a doctor, who is paid by the Board for all necessary medical attendance on the children, and an official Government Inspector visits every foster home as often as may be necessary, but never less than twice a year. The "mothering policy" thus carried on has increased the percentage of maternal nursing from 72 to 82. Children may be "boarded out" with their own mothers. In December, 1912, the number of children under the Board's care was 5,969; 2,991 placed with foster parents and 2,978 with their own mothers. The weekly payments made are:—

For a child under 12 months.....	10s.
For a child from 1-2 years.....	7s.
For a child from 2-14 years.....	1s.

It is found that this is a far better plan than placing children in institutions.

Sir Charles McKeller points out the dreadful fate of the illegitimate child and its mother, and makes an unanswerable plea for better care for them. In Sydney, where the general rate of infant mortality is 69.5 per 1,000 births, the rate for legitimate children is 64.2 and for illegitimate children 147.8. It was found that two-thirds of these mothers of illegitimate children were very young, 2,159 of them under sixteen years of age, 134 under fourteen, 28 under thirteen, 2 only twelve years old, and one eleven years old. Sir Charles McKeller says that a guardian should be appointed for these unfortunate children and infants, and adds: "And the mental condition of the mother should more often than not be a matter for close observation."

"New South Wales," Sir Charles McKeller states, "is by no means alone in her efforts to combat infant mortality rates. All the States of the Commonwealth and the Dominion of New Zealand are fully seized with the necessity for dealing most comprehensively with the question. To a large extent they are working it out on similar lines. The problem is of world-wide significance, and Australia has unique opportunities of solving it. I do not think

I am unduly optimistic in foreshadowing at no very distant date a Federal Law on the subject, and there is another outstanding powerful factor—the women of Australia with their political rights and organizations are an ever-gathering force to be exercised ultimately in the solution of social problems in general, and in particular of those relating to their own sex.”

Your delegates could not but be impressed by the fact that in this matter of the reduction of infantile mortality Canada is far behind Australasia. The deaths per 1,000 of those under one year of age in Manitoba in 1912 were 147.4, in Ontario in 1913, 117.7, and in Montreal and the Province of Quebec generally, the rate is still higher. Conditions here are such that your delegates are of the opinion that the time has come to appoint a Royal Commission on infantile mortality, where questions closely connected therewith, notably the care of mothers, the co-ordination of methods of registration in the different provinces, and the fate of illegitimate children might be investigated.

Care of Children Under School Age.

This was one of the most important and progressive proposals discussed at the Conference. Everyone feels the need of this work. Some one must do it. Children leave the Infant Consultations at the age of one year perfectly healthy, and re-appear at school five years later, often quite otherwise. Some means should be found of co-ordinating voluntary associations and public authorities so that the end of securing good health for all the nation's children may be achieved.

Medical Inspection of Schools.

Medical inspection and other medical work of the Department of Public Instruction in New South Wales is carried on by a Principal Medical Officer, Dr. C. S. Willis, assisted by a staff of ten doctors, five men and five women, and there are also five school nurses appointed by the Department. These appointments were made in 1913, when the work was re-organized. Under the present scheme every child in the State schools is inspected by one of the doctors at least twice during school life. The Department also offered to make this medical inspection, at its own expense, for all the children in other schools. This

offer was accepted, and the Department now has under medical inspection 300,000 school children, about 50,000 of whom are in Roman Catholic schools, and 17,000 in other schools, chiefly private schools. The work done by the staff is evidently very helpful, children who require care being kept under supervision by the school nurse, who visits the homes if necessary. The distance from one school to another is sometimes great—in one case 100 miles, with no railway available. Means of treatment are being considered, especially in remote country districts where some schools are thirty miles from any doctor.

The other work done by the medical staff includes:—

1. The inspection of school buildings.
2. The investigation of epidemics.
3. The instruction of teachers in school hygiene.
4. The instruction of all the senior girls in metropolitan schools in infant care, personal hygiene and home hygiene.

At present the Department is engaged in collecting statistics with a view to establishing a school or schools for mentally defective children. Victoria is probably the only part of the British Empire which has established a system of medical inspection of schools in which every school child has the benefit of medical inspection at the expense of the State.

The results of medical inspection of schools, now well established in England and to a lesser extent in other parts of the Empire, are beginning to appear. The character of these results depends first of all on the personality and professional standing of the head of the service and the members of the staff, and second on the relation of the Medical Inspection Service to the education authorities and to the sanitary and other authorities. There is always a danger of accumulating numerous complicated forms and returns. Records are important, but these should be (1) simple, (2) easily handled, (3) practical, and not too much of the time of the School Medical Officer should be occupied in filling up forms. Everything should be subordinated to the ultimate object of Medical Inspection of Schools, which is to improve the health and physique of the children, to make them better able to take full advantage of the education provided by the

State, and thus become better citizens. Research work should be encouraged.

Child Labor.

The papers presented on this subject warned those present of the somewhat serious conditions now existing in many parts of the Empire—conditions which are not sufficiently realized. More attention to school attendance during school age, to the vocational guidance and education of children, and to the thorough supervision of all industrial and commercial establishments as well as to the prevention of "sweating" are urgently required in almost all parts of the Empire, and in other parts it is equally urgent that such evils as "sweating" and child labor should never be allowed to gain entrance.

Canadian Contributions.

The following contributions were made from Canada.—

G. Frank Beer (President, Toronto Housing Company): "Better Housing in Canada. The Ontario Plan."

Dr. Charles A. Hodgetts (Medical Adviser of the Commission of Conservation, Canada): "Town Planning in Canada."

J. J. Kelso (Superintendent of Neglected and Dependent Children of Ontario): "Education of the Average Child."

Dr. John W. S. McCullough (Chief Officer, Medical Board of Health, Ontario): "Infancy and Health."

Dr. Helen MacMurehy: "Canadian Children Under School Age."

Prof. J. G. Adami: "Town Planning in Canada."

The Exhibition.

At the same time as the Congress there was held an Exhibition, not large, but well

chosen, of subjects bearing on matters of child welfare and town planning. It was visited by over 5,000 people during the three days it was open. Public meetings were held each evening independently of the Congress fixtures, in the large hall in which the exhibits were arranged, and were well attended. Addresses were given by the Marquess of Salisbury, Mrs. Humphry Ward, Mr. Vivian, and others.

To mention the noteworthy exhibits would take too much space. Without going into detail we would mention that the collection included exhibits from Canada, Australia, India and the States. Among the models and illustrations of new city planning schemes, those of Camberra, the new Australian capital, and of the new Delhi, specially deserve mention.

A Recommendation.

Your delegates have been so much impressed by the value of this Conference in familiarizing those living in different parts of the Empire with the advance that is being made in other parts, and in suggesting thus lines for successful legislation and betterment of conditions, that for the good of the various sections of the Empire this Congress should be repeated at intervals of three or five years. We would, therefore, respectfully suggest that it would stimulate greatly the development of Canada if the Victoria League be invited to hold its next Congress in the Dominion, especially if it be able to secure qualified representatives from Australia, New Zealand, and South Africa, who should familiarize our people with the advances being made by these particular communities.

As the result of an investigation, a report of which has been sent to Ottawa, Mr. H. H. Stevens, M.P., for Vancouver, says that the SS, "Komagata Maru," which brought a cargo of Indians to British Columbia last summer, was chartered by a German shipping firm in Hong Kong, and that the shipment was made with a view of fomenting trouble between Britain and her Indian subjects. Mr. Stevens declares that in order to make sure of trouble the vessel was loaded with many undesirables, among them, according to a letter from the Chief of Police of Shanghai, a hundred noted criminals; and when these men returned to Calcutta they precipitated a fatal riot. The first intimation that the vessel had sailed for Canada was contained in a newspaper despatch from Berlin to New York.

THE ENUMERATION OF BACTERIA IN MILK

By JOSEPH RACE,

City Bacteriologist, Ottawa

THE determination of the total number of bacteria in milk has, for many years, been one usually made in connection with the examination of milk, but whilst some sanitarians regard the total number of minor importance, and the flora as all important, others believe that much valuable information can be obtained by this determination alone. The fact that the great majority of regulations regarding the sale of milk contain no other clause with reference to bacteria than a maximum number clause, is sufficient to show the trend of opinion on this subject. Those who deprecate the value of the total bacteria enumeration take the stand that the large majority of the bacteria usually found in milk are harmless saprophytes and that their determination is more or less a waste of time and labor. Whilst the former statement is undoubtedly true, the latter must be emphatically denied. Until bacteriological technique becomes so developed that routine methods can be applied for the detection of pathogenic organisms, those employed in milk examination must be content with the inferential tests obtained by determination of the saprophytes. Milk drawn from the udders of cows with reasonable precautions contains but few bacteria, and, if properly treated, can be delivered in that condition to the consumer. Laxity on the part of the producer or dairyman by the use of dirty containers or lack of cooling facilities produces conditions favorable to the development of bacteria for which milk forms an excellent nidus. Once the milk has become contaminated, the organisms multiply very rapidly under favorable conditions, and, by the time the milk reaches the consumer, have become excessive in number. A low bacterial count is an *a posteriori* argument that proper and reasonable care has been exercised in the production of the sample examined, and it might fairly be inferred that such milk is less likely to contain pathogenic

organisms than one produced by men of careless and slovenly habits. Farmers who take a pride in their produce are more naturally liable to prevent infection of the milk by supervision of their employees, but even this be not true, it must be admitted that the conditions which tend to keep in check the saprophytes also tend to minimize the relative infectiveness, so that to this extent at least must credit be given to the careful producers and dairymen. Other conditions being equal, we may state that the total bacterial count is a measure of relative infectiveness. This conclusion was, in a modified form, also reached by Delapine (*Jour. Hyg.* 1903, Vol. III., No. 1, p. 83) from experiments made as to the toxicity of the milk supply of Manchester. He found that "mixed milk coming from distances more than 40 miles, and generally kept for 24 hours and longer showed an increase of virulence on inoculation into guinea pigs in proportion to the mean temperature in the shade in Manchester during the time the specimen was kept." In all the experiments tuberculous samples were rejected. Increased temperature and keeping period simply involve an increased count so that the above statement can be reduced to one stating that the virulence to guinea pigs was proportional to the bacterial count.

Further figures reported by Delapine regarding the relative toxicity of cooled and uncooled milk confirm this.

	No. of Samples	Percentage of Toxic Samples
1896-1897—		
Unrefrigerated milk..	141	10.7
1898-1901—		
Refrigerated milk .	1,782	2.1

He states that "the difference would probably have been still greater if the milk had been cooled immediately after milking."

After this consideration of the reason d'etre of the total count, the methods employed may conveniently be given.

These are usually divided into two groups, viz., (a) Plating methods, and (b) direct microscopical methods. The former are based upon the ability of the individual organisms to reproduce at such a rate upon the nutrient medium used as to produce a visible colony within the period of incubation, and the latter upon efficient mechanical concentration followed by direct enumeration under high magnification after suitable staining.

Until within the last few years the former method was the one usually employed and as it is still in universal use it will be convenient to treat it first.

Ordinary nutrient gelatine was first used with the plate method for the enumeration of bacteria in milk, the plates being counted after 4 to 5 days' incubation at 20° to 22°C., but in recent years this method has largely been supplanted by the count on nutrient agar after 48 hours' incubation at blood heat. Although the agar medium does not permit as large a percentage of the total bacteria to produce visible colonies within the incubation period as does the gelatine medium, it possesses certain advantages which more than offset this drawback. In routine work it is very desirable that results should be obtained in the shortest possible time, and in this respect the agar medium is decidedly preferable, as it reduces the time required by 60 per cent. If necessary the colonies may be counted after 24 hours' incubation, but the results so obtained do not exhibit the sharper contrasts given by the longer period.

Examples showing these points are given in the following tables:

Table No. 1.

Sample No.	BACTERIA PER C. M. ON	
	Standard agar 48 hours at 37°C.	Standard Gelatine 5 days at 20°C.
1	123,000	224,000
2	8,000	8,600
4	10,300	8,800
5	1,300,000	1,500,000
7	85,000	113,000
8	155,000	240,000
9	12,700	8,600

It will be noticed that when the bacterial count is low the difference between the gelatine and agar count is but small, and the agar count may even, in some instances, exceed that on gelatine; this only

occurs, however, in a small minority of cases, and as the bacterial count increases the ratio of gelatine count to the agar count usually becomes greater.

Table No. 2.

Effect of Incubation Period on Milk Counts on Standard Agar.

Sample No.	Incubation Period at 37°C		Ratio 48 hours 24 hours
	24 hours	48 hours	
684	64,000	140,000	2.2
685	1,500	21,000	14.0
686	55,000	94,000	1.7
687	11,600	16,000	1.4
688	8,500	18,000	2.1
689	44,000	105,000	2.5
690	500	1,600	3.2
691	20,000	63,000	3.1
692	2,300	4,800	2.1
693	2,500	7,000	2.8
695	11,000	21,000	1.9

The average of the ratio of the 48 hour count to the 24 hour count is 3.4, but if the abnormal value of sample 685 is omitted it becomes 2.1, with a variation of from 1.4 to 3.2.

That the addition of 1 per cent. of lactose to both nutrient gelatine and agar favors greater reproduction is shown in the following table:

Comparison of Media for Bacterial Counts of Milk.

Sample No.	Standard Agar 48 hrs. at 37°C	Lactose Agar + 1% 48 hrs. at 37°C	Standard Gelatine 5 days at 20°C	Lactose Gelatine 5 days at 20°C
1—	123,000	180,000	224,000	240,000
2—	8,000	8,400	8,600	8,300
3—	12,000	11,000	6,500	12,300
4—	10,300	11,900	8,800	13,500
5—	1,300,000	1,350,000	1,500,000	1,850,000
6—	60,000	60,000	65,000	84,000
7—	85,000	140,000	113,000	156,000
8—	155,000	230,000	240,000	500,000
9—	12,700	12,800	8,600	14,000

Gelatine media also possess another drawback in the shape of unaccountable plates due to liquefaction of the medium by proteolytic organisms. When these bacteria are few in number or form but a relatively small proportion of the total bacteria, no difficulty is experienced from them, but otherwise they are a source of trouble, and liquified plates are excessive in number. This difficulty is entirely overcome by the use of agar media.

Although the addition of lactose to nutrient agar slightly increases sensitiveness by increasing the count, it is doubtful if

the gain is commensurate with the increased trouble involved in the preparation of the medium.

On the whole it will be found that the enumeration of the bacteria in milk as an inferential test as regarding the care employed in its production, is best accomplished by the use of ordinary nutrient agar with an incubation period of 48 hours at blood heat. This is the method recommended by the Committee of the Laboratory Section of the A. P. H. A. in the report on "Standard Methods for the Bacterial Examination of Milk."

It should always be remembered that the result so obtained does not represent the total bacterial content of the sample, but only those organisms capable of development under the obtaining conditions. The proportion developing may be comparatively small, and is by no means constant, as it depends upon the bacterial flora, and this varies in almost every sample. The lactic ferment, for instance, which is present in every sample of milk, does not grow at all readily on ordinary agar, and the usual bacterial count fails entirely to take any account of it. In fact, as a medium for the study of the bacterial flora of milk, nutrient agar is comparatively useless.

The direct method of enumeration of bacteria in milk as modified by Slack (Tech. Quart. Vol. XIX., No. 1, Mar., 1906), is as follows. Two c.cms. of the sample, after thorough shaking, are inserted into special tubes with rubber stoppers at each end and centrifugalized for ten minutes at 2,500 revolutions per minute in a special apparatus. This apparatus is a modification of the one used by Stewart of Philadelphia for leucocyte estimation, and consists of an aluminum disc and cover ten inches in diameter and $\frac{5}{8}$ inch in depth, fitted to hold 20 tubes arranged radially. This apparatus is made by the International Instrument Co. of Cambridge, Mass., and can be used with the usual electrical centrifuge. After centrifuging, the tubes are carefully removed, and to obtain the sediment with the least disturbance, the tube is held with the cream end downwards, whilst the cream layer is removed by means of a platinum loop. The milk is then carefully poured out without permitting air bubbles to as-

cend the tube, and, finally, with the tube in the same position the other stopper is removed and the sediment is smeared evenly over a marked area on a glass slide with the aid of a drop of sterile water. An area of 4 sq. cms. is convenient, and squares of this size may be marked off on a strip of glass by means of a blue pencil. The sediment is dried by gently heating and stained with methylene blue. The specimen is then examined under a 1-12 in. oil immersion lens and the organisms counted. Each coccus, bacillus, diplococcus or chain represents a colony in the 1-10,000 plate of the same sample when grown on agar for 24 hours at 37°C. This was modified later to a factor of 20,000 to correspond with the 48 hours count at 37°C. on agar. Whilst it was not claimed that the whole of the bacteria are contained in the sediment, it was asserted that in 99 per cent. of the samples a representative number is so precipitated, and that this number bears a fairly constant relation to the bacterial count as determined by plating on agar. (Standard Methods Bacterial Examination of Milk A.P.H.A. page 25).

Slack in a series of over 2,200 samples, compared the results obtained by the centrifugal and plate methods (24 hours at 37°C), and an error of less than 1 per cent. was made in passing as below 500,000 bacteria to the cubic centimetre, milks which the plates showed to be above this limit.

This method has been examined by Goodrich (Jour. Inf. Dis. May 1914, p. 512) who reports very favorably upon it and remarks that very little improvement can be made upon the factor of 20,000 (or 2×10^4) for converting the microscopical results to the 48 hours count on agar. He reports the limits for the factor as being from 0.66×10^4 to 6×10^4 . With a standard of 50,000 bacteria per c.c.m. he found that the direct method wrongly passed 8.6 per cent. and wrongly condemned 8.9 per cent, but that when the standard was raised to 100,000, these figures were reduced to 1.4 and 4.3 per cent. respectively. In considering this paper it is important to note that all the determinations were made on samples secured from the University Stock farm; the variations in bacterial content of such samples would be not near-

ly so great as is met with in routine work on various market milks of unknown origin, with the consequence that the errors would be minimized. The small variation in the counts is clearly indicated by the fact of the mention of only a 1-1,000 dilution being used for plating. Such a procedure is impossible in routine work for market samples in which the count may be anything from 5,000 to 5,000,000, or even more.

In view of the excellent results obtained by Gooderich, the writer decided to experiment with this method, although a consideration of the facts upon which both methods are based did not lead to an anticipation of much accuracy.

If the results of the two methods were to correspond it was essential that a constant proportion of the bacteria capable of development on agar in 48 hours at 37°C. must be precipitated during the process of centrifugalization. *Str. Lacticus*, the usual lactic ferment in milk, and which forms a widely varying proportion of the total bacteria does not grow on agar under the usual conditions, so that either this organism must remain in suspension or the error due to it counterbalanced by some other factor. This seemed very improbable, as it involved a selective action by centrifuging contrary to the laws of gravity; the lactic ferment being greater in mass than the majority of organisms usually found in milk.

Before commencing the experimental work, the necessary observations and calculations were made in order to determine under the conditions used in the actual tests, what the factor would be if the whole of the organisms were precipitated.

Using a No. 6 eye piece and a 1-12 inch oil immersion lens, the area of the field was found to be 1.32 sq. mm. The area of the square used for the reception of the smear was 15-16 in. square, or 569 sq. m.m.

Using 2 c.c. of milk the theoretical factor becomes

$$\frac{569 \times 32}{2} \text{ or } .091 \times 10^4$$

With a slide area of 1 inch square or 1 square inch, the factor becomes approximately 1×10^4 .

If x be the percentage of organisms precipitated in the centrifuge and Y the percentage of the organisms capable of growth

on agar under the obtaining condition the factor (c) will vary as

$$\frac{100}{x} \text{ and as } Y \text{ or } C = \frac{Y}{100} \times 10^4$$

To determine the value of x , a sample of milk was placed in three tubes and centrifuged at 2,480 revolutions per minute, one tube being taken out every 5 minutes and the organisms in the supernatant liquid determined by plating.

The results were:

Time in centrifuge, minutes	5	10	15
Percentage of organisms removed.	25	42	51

For this particular sample the value of X was therefore 42, and if C is taken as 2×10^4 , as determined by Gooderich, Y becomes 84 i.e. 84 per cent. of the total organisms developed upon the agar plate. As previously stated, the accuracy of this method as a means of determining the number of bacteria capable of development upon agar, depends upon the ratio $\frac{Y}{X}$ remaining constant. A series of comparative estimations were made to determine this point. No difficulty was experienced until the microscopical examination was made; the representative field in which the organisms were to be counted was difficult to find owing to the widely differing content of various fields. In order to minimize this source of error 10 fields were taken at random and the average calculated.

In a series of market samples, for which the standard was 500,000 bacteria per c. cm., not a single sample was condemned which passed the plate method; on the other hand, 17 per cent. were passed which were condemned by the plate method. From these results it is obvious that the direct microscopical method would not be oppressive on the milk producer, and that its adoption would be tantamount to lowering the present standard. In this series of market milks c varied within very wide limits, viz., from 0.4×10^4 to 33.0×10^4 , and the author is convinced that this is largely due to the difficulty found in obtaining an even distribution of organisms in the slide. Two observers got widely varying results from the same slides, a condition fatal to accuracy. In the examina-

tion of the slides it was found that instead of the organisms being evenly distributed, of which it was impossible to enumerate. These clumps were but infrequently composed of mixtures of organisms and their appearance was very suggestive of the action of agglutinins. The presence of agglutinins in fresh milk is now a generally accepted fact, and accounts for what was formerly regarded as the bactericidal property of fresh milk.

Although the results obtained were, for

a method of bacterial enumeration, distinctly unsatisfactory, the picture presented by the microscopical examination was valuable owing to the knowledge gained of the bacterial flora and the leucocyte content. In this way, chain streptococci and an excessive number of leucocytes, usually associated with pathological conditions, may be detected. In addition, from the approximate number of organisms present, the dilutions suitable for the plate method of counting can be determined.

A NEW YEAR'S WISH.

December 16th, 1914.

The Public Health Journal,
Lumsden Building, Toronto.

Dear Sir:—

I beg leave to enclose you check covering account to date, at the same time to offer my congratulations to your Journal on the progress you are making and the position you are maintaining under the present trying conditions.

The Public Health Journal has a great mission, and I hope that the coming year may be a very prosperous one with you.

Yours very sincerely,

VITAL STATISTICS

These are questions asked in Examinations for Entrance to the United States Public Health Service. They are presented to Medical Graduates who come up for examination for entrance to the corps. Officers who enter the Public Health Service necessarily must master the essentials of vital statistics. The nature of their work demands this. But it is felt also that the relationship of the practising physician to the registration of births and deaths and to the reporting of the notifiable diseases is such that it is assumed a man who has been graduated in medicine and is ready to enter practice is familiar with the essentials of demography, at least to the extent comprehended by these questions.

1. What are vital statistics?
2. What is meant by demography?

Population Statistics.

3. How is the population of a city or State ascertained?
4. For the purposes of vital statistics, how is the population of a city or State ascertained for years between censuses?
5. Discuss methods of estimating population for intercensal and post-censal periods.
6. Discuss the relationship between population statistics and birth, marriage, morbidity, and mortality statistics.
7. A city had 100,000 inhabitants at the time of the taking of the Twelfth Census (June 1, 1900), and 123,700 at the time of the taking of the Thirteenth Census (April 15, 1910). Give the estimated population of that city as of July 1, 1915, on the basis of arithmetical increase.
8. In a city having a population of 57,600 April 15, 1900, and of 66,300 April 15, 1910, what will be the estimated population as of July 1, 1914, the estimate to be made on the basis of arithmetical increase?
9. In a city of which the enumerated population April 15, 1910, was 66,300, and in which the average annual rate of increase during the previous intercensal period figured on a geometrical basis of increase had been 3 per cent., what will be the estimated population as of April 15, 1915, figured on the geometrical basis of increase?

Marriage Registration and Statistics.

10. What purposes are served by the registration of marriages?
11. Describe a common method in use in the United States by which the registration of marriages is accomplished.
12. What are marriage rates?
13. How are marriage rates expressed; that is, in what terms are they usually stated?
14. What factors influence marriage rates?
15. In a city having a population of 53,420 inhabitants at the taking of the Twelfth Census (June 1, 1900), and of 72,643 at the taking of the Thirteenth Census, (April 15, 1910), there were during the calendar year 1913, 576 marriages recorded. What was the marriage rate for the year?

Birth Records and Statistics.

16. What purposes are served by the registration of births?
17. What is a birth certificate, by whom should it be made out, and with whom registered?
18. Describe a method in common use in the United States for the registration of births and the compilation of birth statistics for a State.
19. What are the essential data usually required in birth certificates?
20. What are birth rates?
21. How are birth rates expressed; that is, in what terms are they usually stated?
22. What factors influence birth rates?
23. What uses are made of birth records in public health administration?
24. Upon what does the accuracy of birth records and birth statistics depend?
25. The city of E had 125,632 inhabitants on January 1, 1913, and 130,368 inhabitants on December 31, 1913. During the month of June, 1913, there were 247 births and during the month of July, 1913, there were 223 births recorded. Give the birth rate for the city during the period June 1 to July 31, both days inclusive; also give the birth rates for June and July separately.
26. In a city which had a population of 44,360 April 15, 1900, and of 53,230 as enumerated April 15, 1910, and which, during the calendar year 1913, had 1,376 registered births, what was the crude or general birth rate for the calendar year 1913? In estimating population use the arithmetical method.

Morbidity Reports and Statistics.

27. What are morbidity reports?
28. How are morbidity reports obtained?
29. What are morbidity statistics?
30. How are morbidity statistics obtained?
31. Describe a method in common use in the United States for securing morbidity reports.
32. What purposes are served by morbidity reports? Of what use are they to a local health department? Of what use to a State health department? Of what use to the Federal health service?
33. Why is the reporting of cases of communicable diseases to the health department by practising physicians necessary for the control of these diseases?
34. What factors influence the completeness with which morbidity reports are obtained in a community?
35. Upon what does the accuracy of morbidity reports depend?
36. What are morbidity rates?
37. What are crude morbidity rates?
38. What are specific morbidity rates?
39. How are morbidity rates expressed, that is, in what terms are they usually stated?
40. What are fatality, or case mortality rates, and how expressed, that is, in what terms are they usually stated?
41. The city of F had an estimated population of 324,000 on July 1, 1912. During the year 953 cases of typhoid fever were reported in the city and there were 51 death certificates registered in which typhoid fever was given as the cause of death. Give the typhoid morbidity rate, case mortality rate, and death rate.
42. The population of the city of G was 11,400 at the time of the taking of the Twelfth Census, June 1, 1900. On April 15, 1910, the population was 14,560. During the year 1912, 75 cases of diphtheria occurred in the city. Of the 75 cases 6 terminated fatally. In making a report of the epidemic what

would you report the morbidity rate of diphtheria to have been, what the diphtheria fatality (case mortality) rate to have been, and what the mortality rate?

Death Registration and Statistics.

43. What purposes are served by the registration of deaths?
44. What is a death certificate, by whom is it made out, and with whom registered?
45. Describe a method in common use in the United States for the registration of deaths.
46. What are the principal data called for by the United States standard death certificate?
47. What is the registration area for deaths of the United States Census Bureau?
48. What are mortality statistics?
49. What are death rates?
50. How are death rates expressed, that is, in what terms are they usually stated?
51. What are crude death rates, specific death rates, standardized (sometimes called corrected) death rates?
52. What factors influence crude death rates?
53. What effect have variations in age distribution of population on crude death rates?
54. Upon what does the accuracy of death registration and mortality statistics depend?
55. What uses are made of the records of deaths and of mortality statistics in public health administration?
56. How is the data obtained from which the United States Census Bureau compiles the mortality statistics of the registration area for deaths?
57. To what extent do mortality statistics show the actual causes of death and upon what does their accuracy in this depend?
58. On July 1, 1914, the city of D had 51,200 population. During the calendar year 1914 there were 896 death certificates registered. How would the crude death rate for the year 1914 ordinarily be expressed?
59. In a city having a population of 44,360 on April 15, 1900, and of 53,230, as enumerated April 15, 1910, and which during the calendar year 1913 had 932 registered deaths, give the crude, general, or central death rate for the calendar year 1913.
60. In a city which had a population of 44,360 on April 15, 1900, and 53,230, as enumerated April 15, 1910, and which during the calendar year 1913 had 932 registered deaths, express the death rate for this period in terms of an annual rate per 1,000 population.
61. In a city which had a population of 44,360 on April 15, 1900, and 53,230, as enumerated April 15, 1910, and which during the first six months of the calendar years 1913 had 530 registered deaths, express the death rate for this period in terms of an annual rate per 1,000 population.

Infant Mortality and Life Tables.

62. What is meant by infant mortality?
63. What are infant mortality rates and how expressed?
64. What are life tables?

CALIFORNIA AND THE EXPOSITIONS OF SAN FRANCISCO AND SAN DIEGO

By FLORENCE WITHROW, B.A.

WHEREFORE does man toil, wherefore does woman spin (metaphorically) if not that, after earning a subsistence and sharing in altruistic service, they may save sufficient to sally forth.

"For to admire an' for to see,
For to be'old this world so wide."

What value has money apart from the above estimable uses, if not for investment in world investigation. "Travel is the only pleasure which does not pall," said wise old Carlyle, although rather a stay-at-home himself. Had he traveled more I ween he would have been less grumpy and Jane would have had less of Tammas' stomach and her own nerves to think about. Our sympathy, though, has always gone more with the grand dour Scot than with his whining but winsome wife.

Well, then, as a cure for dyspepsia and nerves—in short as a panacea for most all ills let man travel.

Exceptional opportunities for our own continent offer this year, because the railways of America are combining in special interchange of lines and roundabout routes at lowest cost. "Maximum mileage at minimum rate" is the motto of this Exposition year.

The *raison d'être* of all this is the celebration in two great Expositions of the completion of the Panama Canal which officially opens Jan. 1, 1915. This dream of four centuries, this "13th Labor of Hercules" is now an accomplished fact and is the most stupendous engineering achievement the world has ever known. Briefly its history is this: In 1513 the intrepid Balboa, with his adventurous Spaniards, crossed the Isthmus of Darien. Pressing on ahead up the mountainous Divide he espied the still waters of the Pacific to which he

gave this name. The story goes that stepping into the surf, with sword outstretched and the banner of Castile unfurled, he claimed for Spain the shores washed by this mighty ocean. Little did he dream of the expanse to which he would extend the Spanish Main.

To France in 1876 belongs the honor of first attempting a waterway through this narrow Isthmus. Three years later Ferdinand de Lesseps organized an International Company which became bankrupt in 1889. Operations were suspended until a new company was incorporated in 1894 which worked against fearful odds until 1901 when the United States Government took over the enterprise, paying \$40,000,000 the appraised value for all rights, franchises, unfinished constructions, plans and properties. The first and greatest problem of the U. S. Government was to make the Canal region healthful. On account of marsh and stagnant lakes men had died like flies until hygienic improvement was accomplished by drainage, purified water and sanitation. To-day the Panama zone is one of the most salubrious and healthful in Central America.

From Colon to Panama is 50 miles, a distance traversed in 9 hours, which now saves a 10,000 mile voyage around Cape Horn. Who can estimate the value of this linking of the seas and hemispheres, thereby establishing the neighborhood of nations? May it cement them in the common bond of universal peace and progress!

What better way is there to celebrate this epoch making event and to unify the nations than by gathering together in a vast international concourse for which no better meeting place could be selected than San Francisco on account of its peculiar advantages.

This splendid city was worthily chosen, as the richest port on the Pacific with the second largest harbor in the world, as an unparalleled modern city second only to New York in palatial hotels and apartment buildings, and as the most perfect example of an entirely new metropolis. Here is exemplified all the improvements and inventions of modern times in the construction and operation of a great city.

In situation the San Francisco Panama-Pacific Exposition is unequalled by any former world's fair—The splendid area is bounded by the Pacific ocean, the Golden Gate, San Francisco Bay and the thickly wooded Presidio (U. S. Army Reservation). The plan of the exposition grounds is exceedingly good, making distances to main buildings nothing like so great as at Chicago or St. Louis. Automobile services will render easy transit to more distant parts such as the long Marine Drive and Presidio Heights.

The color scheme of this beautiful Fair is a marked feature. A creamy tint, resembling Roman travertine is the general tone with red tiled roofs predominating. In architectural strength and magnificence the eleven chief palaces are an amazement. The prevailing style is not over ornate or grotesque but is classic and dignified and the sculptured reliefs and groups of high artistic value were wrought by eminent sculptors. In fact only skilled artists, designers and craftsmen have been engaged in creating this City Beautiful.

Some folk depreciate World's Fairs, but are they alive to the interests of the world and of the age? Surely if progressive men expend \$50,000,000 erecting a group of buildings of unsurpassed magnificence and fill them with the arts and industries of our time, making a veritable treasure house—this accumulated wealth and invention is worth our study. No better education in limited space and time can the mind receive. No lovelier sight in collective architecture can the eye perceive.

We shall never forget our father's comment on the stately line of structures surrounding the Court of Honor at St. Louis. For years he had been a student of architecture, so dared affirm that never, in human history, had there been so noble a grouping of buildings on one area. Ninevah, Babylon, Ephesus, Athens, Thebes,

Memphis, had their glories in marble and stone, but never in one space had they produced a composite group so massive and majestic.

The worth of this Exposition architecture is its fidelity to the type reproduced, whether Classic, Romanesque, Renaissance, Spanish or purely modern in conception. Canada's building worthily represents our vast Dominion and cost \$600,000.

The exquisite taste of the landscape gardening of this World's Exposition is the result of expert design. Shrubbery, trees, sunken lawns have been growing for a year and the floriculture is profuse and brilliant. The horticultural building is a crystal palace covering five acres and contains the highest perfection of plant life. Dividing the lawns are broad roads which were produced by huge steam rollers in batteries of six.

Perhaps the crowning feature is the electrical display which sheds a radiance rivaling the sun. At night the natural color of every structure, sculpture, garden and green leaf appears bright as day. The Tower of Jewels studded with an eighth of a million cut glass prisms, hung tremulously, flashes and scintillates like emeralds and rubies. An entirely new system of flood and searchlight is used, producing effects unknown before.

The courts and colonnades, towers and arches, fashioned on lines of highest architectural merit are softly outlined. Facade and vestibule, cornice and capital reveal some feature of sculptured beauty. In the Courts of Abundance, of the Seasons, of the Universe, of the Palms, etc., fountains and cascades play and pergolas and shady niches afford opportunity for quiet enjoyment. All who have seen any of nature's or man's most glorious sights will maintain that in their remembrance lies a never failing joy. So long as memory lasts they are treasures of the heart and mind. Who then says that travel is a poor investment and that the varied sights of a great Exposition are paltry. That person, like Shakespeare's man who had no music in his soul, is surely fit for "treasons, stratagems, and spoils." Let him visit this magic City by the Sea and the enchantment of its beauty, the vastness of its enterprise, the magnitude of its endeavor will fill him with right perception of the manifold

handiwork and the marvelous advance of man. Inspiration will rightly come and an impetus to higher achievement.

The new million dollar Auditorium in the city, seating 12,000, and the Festival Hall in the Exposition will afford opportunity for hearing some of the world's best music. Congresses and conferences of true educative value will abound, and scientific display and demonstration will hold the observer. No one can estimate the

a gigantic exhibition. Moreover, the Federal Government and individual States have largely increased their original grants.

This is a World's Exposition in spite of war, for 35 nations are participating, including France and Italy, though not England, Germany and Russia. As millions of dollars had been spent before the war broke out, the people of the Western Hemisphere were not the type to permit fail-



*In the Patio of the Science of Education Building,
San Diego ^{Panama} _{California} Exposition*

stimulus that will follow from attention to what one sees and hears. Some permanent impression will be implanted and something definite learned. The education derived will be in proportion to the mental and aesthetic quality of the observer, but even the most indifferent sightseer will have his vision enlarged and his desire increased for some active participation in the world's work.

The alarmist is declaring that the war has ruined the Exposition. He speaks without authority and without knowledge. The United States has forestalled this danger, for with 90,000,000 of people she has wealth and resources sufficient to operate

ure, so with steady purpose they have pursued their course.

There is still another most comprehensive Exposition in San Diego, making a trip to California in 1915 doubly worth while. It is remarkable in its hundreds of constructive features, which differentiate it from any other fair. Originality is its distinctive note and its purpose is unique. Being an Exhibition of Processes, it strikingly shows the immense progress in agriculture, horticulture, dairying, fishing, mining and manufacturing life of the West. One sees sheep shorn by electricity, cows milked by compressed air, fruit sprayed, picked and packed scientifically, fish

caught, cleaned and canned, olives and nuts pressed and oil extracted. Irrigation and mining are in actual operation, and looms and machinery of many kinds are busily working. Also one sees intensive farming and citrus orchards yielding their wealth in rich productive acres. Further a tea nursery, the first in America, tended by Singalese from the great Lipton plantation in Ceylon shows the entire process of tea growing and curing and even serving, for in the picturesque tea garden little maids from Colombo pass dainty tea cups. In the "Painted Desert," reproducing the strange pueblos, the Navajos Indians weave their blankets, the Hopis make their bead embroidery and jewelery, the Zunis shape their pottery before the astonished spectator. Oriental craftsmen also ply their arts of ivory carving, enameling and lacquering, and European artists work in mosaic, marble and glass. Activity and achievement is the theme of this "Exposition Different," as it is called, and the processes of industry are marvelously presented. That work is man's most precious boon becomes a visualized fact.

For picturesque loveliness this Fair of Delight is more beautiful than that at San Francisco, the buildings being less colossal and the architecture entirely of one style, the Spanish Colonial, which embraces structures with rich facades of stucco arabesque as well as of plain Mission design.

One finds himself in a city of Old Spain, where shadows of palms creep over creamy walls. The Plazas and Prados are beautified with glorietas and fountains for the gay stroller. The cool tiled Patios and Cloisters are shaded for the quiet lounge, while the arched colonnades are retreats for fluttering pigeons. Spanish figures are here and there in picturesque costume—the dancing senorita, the caballero, the Grantee, the cowed monk, each intensifying the foreign aspect of the scene. Castanets and tambourines add their notes of strange music.

This being a city set on a hill, a shining pearl in an emerald setting, the views are superb. Buenas Vistas are seen from castellated towers and belfrey turrets, and far off the snow peaks of Old Mexico appear. Below the Puente Cabrillo (arched bridge 1,000 feet long) lies a cypress canyon and sapphire pool. A spirit of seren-

ity pervades this quiet valley which seems miles from the busy fair. The air is laden with the fragrance of eucalyptus, acacia and the scent of roses from trellised arbors. The foreign charm and picturesqueness of it all is most fascinating. As San Diego is the pearl of the South land, so is this fair a gem of rare beauty. We do not exaggerate one whit. Nature and art and poetic thought have combined to make it a realized dream.

The visitor to California will, of course, see the State itself. The trip from North to South (800 miles) is supremely interesting. Mountain and valley, ocean and orchard alternately devote attention. Groves of citrus fruits, fields of alfalfa, plantations of olives and almonds, figs and dates, prunes and walnuts, vineyards of grapes, forests of redwood, avenues of palms, hedges of cacti, all prove it is a summer land. The air is fragrant and the sun warm. The most ideal season is March, April and May.

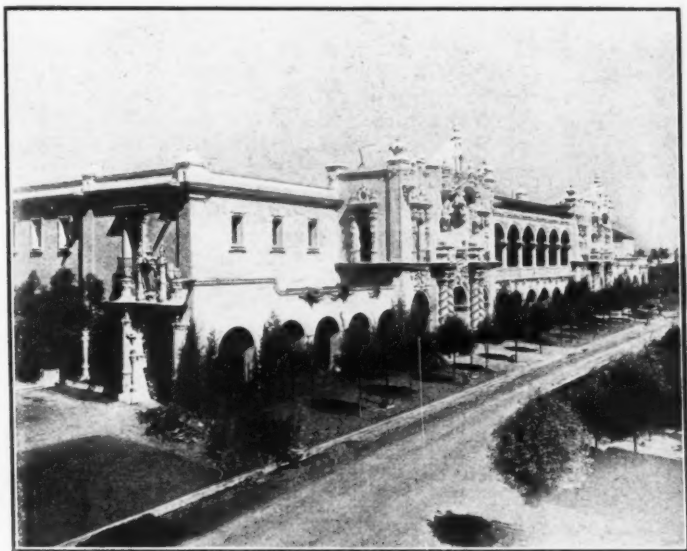
After leaving San Francisco one traverses the orchards and meadows of Santa Clara county, then on to the forest sections and canyons. The entire route to San Diego runs along the coast, sometimes for miles by the sea shore where the contrasting colors of blue water, azure sky and white sand make a perfect picture. The coast is indented with ravishing resorts and bathing beaches. Money, time and skill have been expended to create the most luxurious pleasure places the world knows. They surpass the French Riviera in lavish expense, and the hotels are on a more costly scale, with acres of park, golf links, and landscape garden.

The coast Ranges afford a magnificent background to the mighty expanse of ocean. Snow tops the crest of many soaring peaks and summer valleys spread beneath with wealth of vegetation. Nature is prodigal of her bounties in this rich country. One hardly knows which appeals more, the marine scenery or that of the fertile valleys. Still other features claim admiration—the deep rocky gorges of the canyons with thundering torrents and gorgeous colors, and the forests primeval, with trees gigantic and stately. One's spirit is refreshed and inspired in these inner sanctuaries.

The Coast Route embraces Santa Cruz with sunny sands and gay bathers, Santa Barbara with fashionable promenade and saintly old Mission, Monterey and Del Monte with a peerless Marine Drive leading from the rocky coast to a silent grove of sombre cypresses. Aromatic ozone fills the air and one yields to the spell of forest and surging sea.

The ancient Spanish Missions carry their appeal, perhaps by vesper bells or the low

The cities of California—Los Angeles, Pasadena, Riverside, Redlands, etc., possess a charm peculiar to a southern clime. Their residential districts are large with broad boulevards and shaded streets. The lawns and gardens are ample and exquisitely tended, with tropical trees adding their grace to the foliage of the North. The houses are southern, heavy roofed, and often bungalow in style. Their rambling extent and varied outline, together with



Varied Industries Building,
San Diego Panama California Exposition

chanting of monks or by their quiet air of sanctity and repose. They were humble habitations built by the early Padres to afford Christian shelter for the Indian and rest for the wayfarer, at a convenient day's journey apart. Some are still monasteries and others are kept flower embowered for memory's sake and for the joy of the passerby.

That California is a flower land is evidenced everywhere. Roses and fuchsias creep over pergolas and trellis, sweet-smelling shrubs climb to window casements and flowering vines peep in at lattice doors. Trim rows of quaint plants lean against walls and hedges or grow in riotous profusion in gorgeous beds.

their vine clad beauty make them most picturesque. Whether the house be a modest adobe Mission type, a timbered mansion or a stone cut palace, quaintness and artistic worth are seldom lacking. It is said there are fewer monstrosities in domestic architecture here than elsewhere. Each city has its special attraction, either in superb mountain view or in ocean outlook. Pretty suburbs rival each other and valleys vie in Elysian splendor. Country and city are hives of industry and man can work or play in God's out-of-doors the whole year through.

California is the golden state not only for her precious ore but for her golden fruits, flowers and grains. Myriad shades

of yellow glorify the gardens and fields. Yellow poppies, marigolds and sunflowers, yellow oranges, lemons and grape fruit, yellow butter cups, mustard and golden rod, marshmallow and meadow glow. Nature is joyous and although at times she frowns and sends a blighting doom

upon her promised abundance, periods of frost and drought are rare and this "Eternal Land" more often yields its rich increase than smites it to decay and ruin.

If ever the mythical land of the Hesperides growing with golden fruit has been realized, is it not California?

THE LAND ETERNAL

As Pringly walked along the street,
A friend of his he chanced to meet.
Said Jones to Pringly: "Where've you
been?"

Then Pringly, he began to grin.

And said: "I've seen that land
Of eternal sunshine, and it's grand;
A place of perfect peace and beauty,
To go some day will be your duty.

"The roses bloom the whole year through,
The folks are wondrous happy, too.
It was the least that I could do
To come back with the news for you."

Jones looked him over, shook his head:
And said to Pringly: "You've been dead
And gone to heaven, I know now;
But man alive, please tell me how.
Said Pring to Jones: "Shucks! No, dog-
gorn ya,
I've just got back from California."



A new year has dawned and a new volume is begun. We enter upon the new year and we commence **Our 6th Volume.** the task of preparing the new volume with confidence, albeit we are in the midst of troublous times and straightened pocketbooks. We have been singularly fortunate and believe implicitly in the continued support of our friends. During 1915 we are planning to keep the existing sections filled with splendid articles, and we are publishing some other material which will add variety and attractiveness. We feel certain that anyone who follows the Canadian Poets month by month, will feel thankful that we have arranged such a valuable Canadian anthology. We know that many people have had their interest quickened in our Canadian Army Medical Corps because of the splendid papers which have appeared in that section. As for Travel, we have, as you know, had a monthly article from the pen of Miss Florence Withrow, B.A., who is well known as an ideal conductor of tourists, and a lover of the highways and by-ways of the world. Miss Withrow will favor us during 1915. There is nothing so educative as travel, nor so healthful to workers in the busy marts of trade. It is no small undertaking to have navigated successfully the five first years of our Journal's life. We have done it. Now for still larger and better things.



Continuing their weary ways the Allies push steadily onwards towards **The Berlin** and the end of the war. No **War.** matter how long it may be to the finale, we are more and more confident, as the months pass, as to what the

issue will be. The world learns more and more the debt it owes to the Belgian people. Standing before the onslaught of the German hordes, they turned the tide of the war, making a final victory possible. Now they look upon their shorn fields, their devastated homes and their demolished cathedrals with weeping eyes. From Belgium to Britain there comes a heart-touching declaration. Here it is.

BELGIUM TO BRITAIN.

The following stirring and pathetic declaration to the British people on the events of the last few weeks was published in English in most of the Belgian newspapers:

"We feel it incumbent to tell you a word in your own language which we trust will reach the innermost of your noble hearts.

"It is the word which every Belgian has on his lips in these dark times.

"It is the expression of the most heart-felt thanks.

"Thanks from nation to nation, from people to people, from man to man.

"During these unspeakable trials which our poor little country has had to put up with for the last two months, your people of Great Britain and Ireland, have remained our hope and trust.

"If we had not despaired during this hurricane of fire and blood it is because we have never forgotten that you are watching over us and that you will never permit our destruction.

"Even at this dark moment, when the final result of this gigantic strife of the civilized world against the returning barbarism might leave doubts, we may pluck up new courage with the unshakeable conviction that Great Britain and Ireland will never permit the yoke to be put on our dear motherland, even if all that remains of that motherland, would be a smoking heap of ruins.

"It was the confidence in British diplomacy, to that enlightened generous diplomacy that free and independent Belgium is indebted for its existence and for eighty years of peaceful progress.

"But who on our side could have surmised at the beginning of this war, that the work of the British statesmen would have taken

root so deeply in the hearts of the British nation, that your government, real friends, acting towards Belgium as they did, were at unison with the sentiments of your people.

"The greatest need has conceived the mightiest, the widest altruism the world has ever had the privilege to witness.

"The entire Belgian people feels rivetted to your nation through eternal ties of blood.

"All ours who have come to you have found a brother and a sister there, and how many have taken upon themselves with a light mind and a warm heart the duties of parents for poor orphans who have lost father or mother—nay both—in this terrible war!

"To how many have you not restored the belief in righteousness and generosity during these black nights of despair? And have you not sent thousands and thousands of your best to us? Your soldiers, chivalrous and undaunted in battle, spilling their blood of their own free will by our side and along with our French allies for the holy cause of free civilization? Your doctresses, doctors and nurses coming mostly from the highest classes of society as administering angels amongst the horrors of war.

"This is what we wanted to tell you, in your tongue, friends, of Great Britain and Ireland, so that it may penetrate into the innermost of your hearts."



There must be tremendous interest in the following, culled from the Insurance press reports of the Association of Life Insurance Presidents, which met recently in New York City. Insurance men are always out for Business, and they desire to insure every reasonably good risk. Their attitude, therefore, towards alcohol has in it nothing whatever of sentimentalism. Their attitude is one of hard-headed, business acumen. They are keen to see the weak place in our social fabric, and they place the finger unhesitatingly upon King Alcohol as the greatest foe with which they have to deal. The wonder is that the people pay little heed to repeated warnings.

New York, Dec. 10.—Statistics showing many causes that have shortened the lives of policyholders in the United States and Canada in the last twenty-five years were presented to-day to the eighth annual con-

vention of the Association of Life Insurance Presidents, which for several years has been studying ways and means to prolong the average span of life.

Indulgence in alcoholic beverages, over-eating and "under-eating" were among some of the many reasons indicated for premature death among the two million policyholders whose records were placed in the investigation which has just been finished. Emphasis was placed to-day on the fact that all the lives involved in the investigation had been carefully examined by competent physicians, and that, in general, the more hazardous the occupation, or the greater the defect in physical condition, in family history or in personal history, the more care was taken in selecting the lives.

Mr. Arthur Hunter, Actuary, of New York, who reported these matters to the association to-day, is the Chairman of the Central Bureau of the Medico-Actuarial Mortality Investigation which was conducted on behalf of forty-three leading life insurance companies in the United States and Canada. These companies contributed their collective experience on many different classes of insured supposed to have higher death rates than normal. While the object of the investigation was to determine which types of persons could safely be insured at the regular rates, which types should be charged an extra premium, and which should be declined, it was stated to-day that the results of the inquiry were available for public use in lengthening life.

"If the Government of Russia carries out its present intention to abolish permanently all forms of alcoholic beverages, the saving in human life will be enormous," said Mr. Hunter, in illustrating these new American statistics in their relation to the use of alcoholic beverages. "It is not too much to say that the loss of 500,000 men as the result of the present warfare could be made good in less than ten years through complete abstinence from alcoholic beverages by all the inhabitants of Russia."

"There is a general impression that saloon-keepers do not live as long as persons in non-hazardous occupations, but it is not generally known that most classes who are connected with either the manufacture or sale of liquor have a high mortality. Among saloon proprietors, whether they attend the bar or not, there was an extra mortality of 70 per cent., and the causes of death indicated that a free use of alcoholic beverages had caused many of the deaths. The hotel proprietors who attended the bar either occasionally or regularly had as high a mortality as the saloonkeepers, i.e., the lifetime was reduced about six years on the average on account of their occupation. In fourteen subdivisions of the trades connected with the manufacture or sale of alcohol there was only one class which had a normal mortality, and that was the distillery proprietors."

The Health Department of the City of Toronto is after the men who sell light weight bread, and there are several offenders. In an attempt to get information on this subject from various Ontario towns and cities a list of printed questions were sent out. All kinds of answers were received, but one of the richest was from a small town in the heart of a splendid agricultural district. Replying to the question, "Have you any trouble with light weight in your town," the town clerk writes: "We have no trouble. We have only two bakers, and one watches the other." Shades of Diogenes! Is this the Ontario idea of honesty? We trust it goes deeper than this and yet we are convinced that one of the barriers confronting a Medical Officer of Health in his fight for better conditions is the dishonesty of the citizens of his own particular community. Well is it for him if he can rely on one man watching the other. But what if the two of them agree to disobey the laws?



We confess that we have rarely been more interested in a book than in that which we have noticed last month among the books received under the title Home Treatment of Tuberculosis. It is only a report, but it is extremely fascinating. There is nothing after all quite so interesting as the study of social science, finding out how the other man lives, and why he exists under certain conditions. When tuberculosis gets a grip on the breadwinner and he is forced to lay aside his work, when he finds that he has no resources

with which to fight his battle, when he sees his loved ones going down in an unequal struggle with elements over which he has no control, then there is heart-break and bitterness of spirit. This describes an experiment, whereby the patient may obtain the same help he might get by going away, without breaking up the home. We believe you should send for a copy of the excellent report and peruse it carefully for it is seeking to solve one of the greatest problems of modern times. We are publishing in the February issue an article on this experiment, illustrated by splendid photographs.



We have received the following item in reference to a good friend of ours, who pays us a visit each month, and is very much appreciated. We are glad to know of this consolidation.

"The Dietetic and Hygienic Gazette, which is just completing the thirtieth year of its existence, has been purchased by The Critic and Guide Company, and beginning with January, 1915, will be consolidated with The Critic and Guide, and the combined journals will be under the editorship of Dr. William J. Robinson. The offices of publication are at 12 Mt. Morris Park W., New York City."

The Critic and Guide is well worth a careful perusal month by month. The Editor has things to say, and he says what is in his mind without fear. This Journal covers a field that is very little understood, and yet vital to the healthy living of a community. We wish for the Critic and Guide continued prosperity and fearlessness to proclaim a much-needed message.



PUBLIC WELFARE

KEEP YOUNG

We mature too early. We grow old too soon. We die before our time. We still need reminding that eight hours out of every twenty-four may be spent in the pure air simply by keeping our windows open all night. But sunlight, food, exercise, rest and pure air do not comprise all our needs if we would keep young.

Old age is ossification. The suppleness of youth is lost. The locomotive becomes a **stationary engine**. Life has few liquid assets left. It is tied to system, rule, convention. It has formed habits. A habit is something that *has* you. *Habet*. Age tethers itself to formulæ and loses the faculty of fancy. It glorifies conservatism beyond the limits of effectiveness. It is ruled by the hard edges and straight lines of its own ideas and opinions. This is senility.

For this disease, there is a better cure than chloroform. Launch out into some new interest. Do something unusual every day. This will prevent the thoughts from hardening and balance their activity. A dose three times a day of some form of original mental or moral energy will cure a pretty bad case of wooden-head. For that deadly disease, hearterio-sclerosis, commonly known as hardness of heart, work out every day some scheme for keeping yourself kind-hearted. Kindness is very contagious.

Youth is a harvest-field of initiative and originality. A little child surprises us continually with his new ways of looking at things. He sees the thought freshly and from a new aspect. He has no habit-shells to break before his thought-chick is hatched. There are no grave-clothes on his mind.

Life is lots of fun if we only know it. Fountains of youth will pour their freshening influence into our lives if we will only turn the spigot. Let us not surrender to custom or deliver ourselves over to any set of opinions. Let us not sell ourselves out.

The mind and heart are capable of keeping young forever. What is the universe so big for? For you and me and the others to play in. And what is eternity so long for? For the same reason. Let the breezes blow. Let unseen fingers sweep over the chords of life's harp. Let us have some music. Kill that prejudice. It's as dangerous as a house-fly. Swat that habit, or it will turn you into a mummy before you are forty. Keep young.

—Damon.



X.



WILFRED CAMPBELL

"It is just because Campbell has always made man and the larger, greater interests of man, the prevailing note of his poetic work, and is doing it more than ever before, that he is to be placed in the very front of our Canadian singers. . . . The majesty and grandeur of nature appeals to the poet, but there is always attached thereto the larger human interest. . . . His exquisite nature poems are as worthy of being read as any that Wordsworth wrote. . . . 'The Bereavement of the Fields', the beautiful tribute to the memory of Archibald Lampman, worthily takes its place beside the other greater elegies of the English language. In technique and melody it ranks very high. . . . The well-known poem 'The Mother,' has justly been praised as one of the finest poems in all English literature."
 —Prof. L. E. Horning, M.A., Ph.D., in *Toronto Globe*, Dec., 1905.

WILLIAM WILFRED CAMPBELL, one of the most distinguished of our native writers, is a poet and novelist by inherited right. He is a descendant through his father, the Rev. Thos. Swaniston Campbell, of the first Lord Campbell, of the House of Argyll, and is of the same stock as the poet, Thomas Campbell, and the novelist, Henry Fielding.

His maternal grandfather was the late Major Francis Wright of the Royal Horse Guards.

Our subject was born in Berlin, Ontario, on June 1st, 1861, and was educated in the High School, the University of Toronto, and at Cambridge, Mass. (The honorary degree of LL.D. was conferred upon him in 1906 by the University of Aberdeen.)

Dr. Campbell was married in 1884 to Mary Louisa, only child of the late David Mark Dibble, M.D., of Woodstock, Ont., whose wife, Louisa Mackenzie Macdonald, was descended from the ancient Barons Mackay of Strathly and Derlot, North Britain, and from Robert Stuart, Earl of Orkney, son of James V. of Scotland.

Dr. Campbell was ordained a clergyman of the Episcopal Church in 1885, and undertook parish work in New England. Three years later he returned to Canada and became Rector of St. Stephen, New Brunswick. In 1891 he retired from the ministry to devote his life chiefly to literary effort, and entered the civil service at Ottawa. For some years he has been associated with Dr. Doughty in the Dominion Archives Bureau.

In 1905, the best of Campbell's lyrics and sonnets were published in a substantial volume entitled, "The Collected Poems of Wilfred Campbell" (Briggs). At the same time appeared "The Collected Poems of Isabella Valancy Crawford" (Briggs), and such a notable coincidence aroused

much interest in Canadian literary circles, and many favorable reviews and editorial comments.

There is another coincidence of singular interest pertaining to these poets; each has written a remarkable poem on an identical theme,—*the soul of a mother returning from the grave for her child*. "The Mother's Soul" is the title of Miss Crawford's poem, and "The Mother" that of Campbell's.

In 1906, Dr. Campbell told me that he ranked his poetical tragedies and dramas,—"Mordred and Hildebrand" (1895) and others—as his best work, but there are dissenting critics.

Campbell's historical novels, "Ian of the Orcades" (1906) and "A Beautiful Rebel" (1909), should be more widely read, and several other volumes of historical importance. Indeed his literary achievements are being added to yearly with a will and energy indomitable and purposeful. Wilfred Campbell is a great Canadian.



THE CHILDREN OF THE FOAM

Out forever and forever,
Where our tresses glint and shiver
On the icy moonlit air;
Come we from a land of gloaming,
Children lost, forever homing,
Never, never reaching there;
Ride we, ride we, ever faster,
Driven by our demon master,
The wild wind in his despair.
Ride we, ride we, ever home,
Wan, white children of the foam.

In the wild October dawning,
When the heaven's angry awning
Leans to lakeward, bleak and drear;
And along the black, wet ledges,
Under icy, caverned edges,
Breaks the lake in maddened fear;
And the woods in shore are moaning;
Then you hear our weird intoning,
Mad, late children of the year;
Ride we, ride we, ever home,
Lost, white children of the foam.

All gray day, the black sky under,
Where the beaches moan and thunder,
Where the breakers spume and comb,
You may hear our riding, riding,
You may hear our voices chiding,
Under glimmer, under gloam;
Like a far-off infant wailing,
You may hear our hailing, hailing,
For the voices of our home;
Ride we, ride we, ever home,
Haunted children of the foam.

And at midnight, when the glimmer
Of the moon grows dank and dimmer,
Then we lift our gleaming eyes;
Then you see our white arms tossing,
Our wan breasts the moon embossing,
Under gloom of lake and skies;
You may hear our mournful chanting,
And our voices haunting, haunting,
Through the night's mad melodies;
Riding, riding, ever home,
Wild, white children of the foam.

There, forever and forever,
Will no demon-hate dis sever

Peace and sleep and rest and dream;
There is neither fear nor fret there
When the tired children get there,

Only dews and pallid beam
Fall in gentle peace and sadness
Over long surcease of madness,

From hushed skies that gleam and gleam;
In the longed-for, sought-for home
Of the children of the foam.

There the streets are hushed and restful,
And of dreams is every breast full,

With the sleep that tired eyes wear;
There the city hath long quiet
From the madness and the riot,

From the failing hearts of care;
Balm of peacefulness ingliding,
Dream we through our riding, riding,

As we homeward, homeward fare;
Riding, riding, ever home,
Wild, white children of the foam.

Under pallid moonlight beaming,
Under stars of midnight gleaming,

And the ebon arch of night;
Round the rosy edge of morning,
You may hear our distant horning,

You may mark our phantom flight;

Riding, riding, ever faster,
Driven by our demon master,

Under darkness, under light;
Ride we, ride we, ever home,
Wild, white children of the foam.



ENGLAND

England, England, England,
Girdled by ocean and skies,

And the power of a world and the heart of
a race,

And a hope that never dies.
England, England, England,

Wherever a true heart beats,
Wherever the armies of commerce flow,
Wherever the bugles of conquest blow,
Wherever the glories of liberty grow,
'Tis the name that the world repeats.

And ye, who dwell in the shadow
Of the century-sculptured piles,
Where sleep our century-honored dead,

While the great world thunders overhead,
And far out, miles on miles,
Beyond the throb of the mighty town
The blue Thames dimples and smiles:—

Not yours alone the glory of old
Of the splendid thousand years
Of Britain's might and Britain's right
And the brunt of British spears;—

Not yours alone, for the great world round,
Ready to dare and do,
Scot and Celt and Norman and Dane,
With the Northman's sinew and heart and
brain,

And the Northman's courage for blessing
or bane,
Are England's heroes too.

North and south and east and west,
Wherever their triumphs be,
Their glory goes home to the ocean-girt
Isle

Where the heather blooms and the roses
smile,

With the green Isle under her lee.
And if ever the smoke of an alien gun
Should threaten her iron repose,
Shoulder to shoulder against the world,
Face to face with her foes,
Scot and Celt and Saxon are one
Where the glory of England goes.

And we of the newer and vaster West,
Where the great war-banners are furled,
And commerce hurries her teeming hosts,
And the cannon are silent along our coasts;
Saxon and Gaul, Canadians claim
A part in the glory and pride and aim
Of the Empire that girdles the world.

Yea, England, England, England,
Wherever the daring heart
By arctic floe or torrid sand
Thy heroes play their part;—
For as long as conquest holds the earth,
Or commerce sweeps the sea,
By orient jungle or western plain
Will the Saxon spirit be;
And whatever the people that dwell be-
neath,
Or whatever the alien tongue,
Over the freedom and peace of the world
Is the flag of England flung.

Till the last great freedom is found,
And the last great truth be taught,
Till the last great deed be done,

And the last great battle is fought;
 Till the last great fighter is slain in the
 last great fight,
 And the war-wolf is dead in his den,
 England, breeder of hope and valor and
 might,
 Iron mother of men.

Yea, England, England, England,
 Till honor and valor are dead,
 Till the world's great cannons rust,
 Till the world's great hopes are dust,
 Till faith and freedom be fled;
 Till wisdom and justice have passed
 To sleep with those who sleep in the
 many chambered vast,
 Till glory and knowledge are charnelled,
 dust in dust;
 To that is best in the world's unrest
 In heart and mind you are wed:—
 While out from the Indian jungle,
 To the far Canadian snows,
 Over the east and over the west,—
 Over the worst and over the best,
 The flag of the world to its winds unfurled,
 The blood-red ensign blows.



JOB

In all that olden Israelitish lore
 Whose lofty beauty fills the ages' span,
 'Mid all those mighty souls who being bore,
 There was one man, a king, who lived a
 man.

Smitten of heaven, scourged of all earth's
 woes,
 With love and kinship, wealth, forsworn
 and fled;
 Stung by those friends, worse ills to men
 than foes,
 Tormenting where they might have com-
 forted:—

Stripped of all hopes that common men
 hold dear,
 Polluted of body, clothed with leprous
 scars,
 There 'mid his ashes alien from his
 race,
 He still maintained his being without fear,
 And lifting agonized eyeballs to the stars,
 Did question Deity, naked, face to
 face.

THE LAST PRAYER

Master of life, the day is done;
 My sun of life is sinking low;
 I watch the hours slip one by one
 And hark the night-wind and the snow.

And must thou shut the morning out,
 And dim the eye that loved to see;
 Silence the melody and rout,
 And seal the joys of earth for me?

And must thou banish all the hope,
 The large horizon's eagle-swim,
 The splendor of the far-off slope
 That ran about the world's great rim,
 That rose with morning's crimson rays
 And grew to noonday's gloried dome,
 Melting to even's purple haze
 When all the hopes of earth went home?

Yea, master of this ruined house,
 The mortgage closed, outruns the lease;
 Long since is hushed the gay carouse,
 And now the windowed lights must
 cease.

The doors all barred, the shutters up,
 Dismantled, empty, wall and floor,
 And now for one grim eve to sup
 With death, the bailiff, at the door.

Yea, I will take the gloomward road
 Where fast the arctic nights set in,
 To reach the bourne of that abode
 Which thou hast kept for all my kin.

And all life's splendid joys forego,
 Walled in with night and senseless
 stone,
 If at the last my heart might know
 Through all the dark one joy alone.

Yea, thou mayst quench the latest spark
 Of life's weird day's expectancy,
 Roll down the thunders of the dark
 And close the light of life for me.

Melt all the splendid blue above
 And let these magic wonders die,
 If thou wilt only leave me, Love,
 And Love's heart-brother, Memory.

Though all the hopes of very race
 Crumbled in one red crucible,
 And melted, mingled into space,
 Yet, Master, thou wert merciful.

THE MOTHER

II.

It was April, blossoming spring,
They buried me, when the birds did sing;

Earth, in clammy wedging earth,
They banked my bed with a black, damp
girth.

Under the damp and under the mould,
I kenned my breasts were clammy and
cold.

Out from the red beams, slanting and
bright,
I kenned my cheeks were sunken and
white.

I was a dream, and the world was a
dream,
And yet I kenned all things that seem.

I was a dream, and the world was a
dream,
But you cannot bury a red sunbeam.

For though in the under-grave's doom-
night
I lay all silent and stark and white,

Yet over my head I seemed to know
The murmurous moods of wind and snow,

The snows that wasted, the winds that
blew,
The rays that slanted, the clouds that
drew

The water-ghosts up from lakes below,
And the little flower-souls in earth that
grow.

Under earth, in the grave's stark night,
I felt the stars and the moon's pale light.

I felt the winds of ocean and land
That whispered the blossoms soft and
bland.

Though they had buried me dark and
low,
My soul with the season's seemed to
grow.

From throes of pain they buried me low,
For death had finished a mother's woe.

But under the sod, in the grave's dread
doom,
I dreamed of my baby in glimmer and
gloom.

I dreamed of my babe, and I kenned that
his rest
Was broken in wailings on my dead
breast.

I dreamed that a rose-leaf hand did cling;
Oh, you cannot bury a mother in spring!

When the winds are soft and the blossoms
are red
She could not sleep in her cold earth-bed.

I dreamed of my babe for a day and a
night,
And then I rose in my graveclothes white.

I rose like a flower from my damp earth-
bed
To the world of sorrowing overhead.

Men would have called me a thing of
harm,
But dreams of my babe made me rosy and
warm.

I felt my breasts swell under my shroud;
No star shone white, no winds were loud;

But I stole me past the graveyard wall,
For the voice of my baby seemed to call;

And I kenned me a voice, though my lips
were dumb;
Hush, baby, hush! for mother is come.

I passed the streets to my husband's
home;
The chamber stairs in a dream I clomb;

I heard the sound of each sleeper's
breath,
Light waves that break on the shores of
death.

I listened a space at my chamber door,
Then stole like a moon-ray over its floor.

My babe was asleep on a stranger's arm,
 "O baby, my baby, the grave is so warm,

"Though dark and so deep, for mother
 is there!

O come with me from the pain and care!

"O, come with me from the anguish of
 earth,

Where the bed is banked with a blossom-
 ing girth,

"Where the pillow is soft and the rest
 is long,

And mother will croon you a slumber-
 song—

"A slumber-song that will charm your
 eyes

To a sleep that never in earth-song lies!

"The loves of earth your being can spare,
 But never the grave, for mother is there."

I nestled him soft to my throbbing breast,
 And stole me back to my long, long rest.

And here I lie with him under the stars,
 Dead to earth, its peace and its wars;

Dead to its hates, its hopes, and its harms,
 So long as he cradles up soft in my arms.

And heaven may open its shimmering
 doors,

And saints make music on pearly floors,

And hell may yawn to its infinite sea,
 But they never can take my baby from
 me.

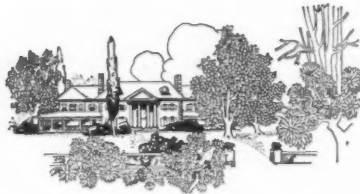
For so much a part of my soul he hath
 grown

That God doth know of it high on His
 throne.

And here I lie with him under the flowers
 That sun-winds rock through the billowy
 hours,

With the night-airs that steal from the
 murmuring sea.

Bringing sweet peace to my baby and me.





SOME HISTORICAL NOTES ON THE BRITISH MEDICAL SERVICES

By *Lieut.-Col. J. T. FOTHERINGHAM*

Canadian Army Medical Service

An address given to the Association of Officers of the Medical Services of Canada at the Annual Meeting, Ottawa, February 24, 1914, and reprinted from the Journal of the Royal Army Medical Corps.

WHEN informed a year ago of your kindness in selecting me to preside over the fortunes of this Association, I accepted the honour with much searching of heart and, I trust, with a due sense of duty.

From relatively small beginnings, due to the initiative of Colonel Sterling Ryerson, the Association has grown under the fostering care of successive Directors-General, and not the least I may, without invidious comparison, mention our present Director-General, Colonel Jones; until now we may congratulate ourselves upon, at least, a lusty adolescence and a fair promise of being thoroughly useful to our own branch of the Service and truly serviceable to the interests of the country and the Empire. More particularly do I beg to congratulate myself and you, gentlemen, upon the presence here for the first time of an official representative of our parent corps, the Royal Army Medical Corps. This honour is greatly enhanced by the circumstance that the official representative is a gentleman so well known in all the medical services of the world and in all the scientific circles of the Continent and of this Western Hemisphere. Recognizing in all the circumstances my own inability to contribute anything of outstanding scientific merit or of any first-hand technical value, I have selected as my subject, although I well know it is one which could not be exhausted in one brief paper or in many, the history of the British medical services, and propose, by way of food for our *esprit de corps* and nutriment for our patriotism, to give you some brief and rather disconnected historical notes on the medical service of the British Army, more particularly as we have seen it in Canada.

The Medical Service in Canada has existed in its present form for some thirteen years, and inheriting, as we do, the traditions of the British Army Medical Service, we feel that we have reached a stage of our development in which we can, for a time, forget the rudiments, even the younger of us, and betake ourselves for our encouragement and enlightenment to the history of the Service to which we have the honour to belong. I need not apologize for this; no one gets far into the Service or becomes much advanced in education of any sort without learning the value of historical and biographical knowledge, and we are all delighted to see that our Director-General, in what is sure to be a most interesting and recondite paper, is following up this same line. Who

would stand up and say, for instance, that though the charge of the Six Hundred at Balaclava was a military error, the memory of that wild ride has been of no value to the British soldier?

"When can their glory fade?
O the wild charge they made!
All the world wondered.
Honour the charge they made!
Honour the Light Brigade,
Noble six hundred."

My sentiment was well expressed by the French officer who watched the charge and as he saw it launched, exclaimed "C'est magnifique! Mais ce n'est pas la guerre."

If you will pardon a personal allusion, I would like to confide to you that the circumstance which mainly turned my youthful thoughts, at about eleven years of age, to military training was the introducing of my hand through a broken cupboard door into a book-case in the public school I attended for a short time as a boy in the country, which contained part of the books of a disused mechanics' institute library, and the abstraction therefrom of the first book that I could reach, which was Napier's "History of the Peninsular War." Of course at that tender age I could only appreciate the battle pictures painted in that magnificent resounding prose of which Napier was a master; and I mark as another epoch in my military training after a later second reading of Napier, a much more recent and careful reading of Colonel Henderson's two-volume "Life of Stonewall Jackson," a work which cannot be read too often or by too many officers in any army in the world, for there was a soldier, one of the finest ever born into this sinful life. Let me remind you too of Lord Macaulay's dictum—"A people which takes no pride in the noble achievements of remote ancestors will never achieve anything worthy to be remembered with pride by remote descendants." And I think you will admit with me that at this juncture of our evolution as a people we, in Canada, need more than anything else, in order that we may appreciate our privileges, and so rise to a more adequate conception of the duty that goes with privilege, a fuller knowledge of the struggles and agonies and victories and defeats and deaths and triumphs of our predecessors in the service of the British Crown. We need to realize the preciousness of the privilege, for instance, of walking into Westminster Abbey and calling it our own, a privilege denied to our American cousins, or the privilege of sharing in the glories of British rule in India, that we may awaken to a proper sense of our duty, not only to the Mother Country, nor in the second place to ourselves, but also to the other partners in the Empire, say to Australia and New Zealand, washed as they are by the waters of the same Pacific Ocean as ourselves; but that would be a topic for a whole evening by itself. I should like to point out first the influence of the Army medical officer upon our medical evolution in Canada, and especially in Upper Canada and in Nova Scotia and New Brunswick. Let us contrast the present condition of medical education and practice in Ontario with that to the south of the line.

At the beginning of the last century when the United States began their separate existence they had a population of about four millions. The first medical school in that country, now the Medical Faculty of the University of Pennsylvania, had been established only thirty-five years; the Medical Department of King's College, New York, now Columbia, thirty-three years; Harvard, seventeen years; and the Medico-Chirurgical Faculty of Maryland, eleven years. In the whole country there were but two general hospitals and one medical journal, and the only medical libraries were one each in connection with the hospitals of New York and Philadelphia. The animosities and hatreds of their Revolutionary War drove American students, not to London and Edinburgh, but to Berlin and Paris, so that the whole genius of medical education in the

United States has been, and still is, of the continental, rather than the British type. At the same time a struggling little community, totalling about 70,000 souls, along the fringe of the forests north of the Great Lakes, especially Erie and Ontario, was dependent for its medical attendance mainly upon the medical officers of the British troops in the country. These were, as a rule, men of high character, fine training, and good social position, and up to about the year 1840, when the effects of the MacKenzie Rebellion began to be felt in collegiate circles, their social position naturally kept them in close touch and sympathy with the ruling powers, whom we may roughly name by the old title, "The Family Compact." The honourable character and traditions of the profession of the Motherland were thus transferred at a crucial period to our rough community, and it would be inspiring to consider, if one had time, what manner of men these were.

On the wall of a main corridor in the General Hospital in Toronto, founded in 1819, it is said, there hangs a life-size portrait of one of the best of them, Dr. Christopher Widmer, who resigned his commission in the Service and began civil practice in York in 1815. For thirty-five years he was chairman of the Medical Board of Upper Canada, which controlled admission to the practice of medicine, until, at Confederation in 1865, the present Ontario Medical Council was formed. A study of that portrait as you pass by will do more to show you what I mean than any words of mine. Of him Sir William Osler says: "One picture on the canvas of those early days lingers in the memory, illustrating all the most attractive features of a race which has done much to make this country what it is to-day. Widmer was the type of the dignified old Army surgeon, scrupulously punctilious, and in every detail regardful of the proprieties of life." Dr. Christopher Widmer has justly been called the Father of Medicine in Ontario. He and his Army associates, most of them trained in the schools of London, Edinburgh, and Dublin at a period made brilliant by the labours of Jenner, Percival Pott, the Hunters, Benjamin and John Bell, and other great teachers, stamped their influence indelibly upon the medical profession of the Province and early fixed the character of our clinical teaching and practice. One good result of their friendliness with the governing powers of the time, because they were Tories by instinct and association, was that they induced these authorities to lay down sound laws in the establishment of medical training, particularly in King's College, Toronto, which began operations in 1844. The memories and experiences of the War of 1812 had given them a probably well-grounded fear of the training which our own men might get in the schools to the south of us.

The last of these men whom I have in mind was the late Dr. James H. Richardson, who was the first medical officer of the Royal Grenadiers in Toronto, and completed his training at Guy's Hospital in the late forties. His father lost an arm in the attack on Sackett's Harbour in the War of 1812 to 1815. Even down to the present day the result of their labours persists in our relative immunity from most of the evils of free practice and quackery, of which our neighbours to the south are just beginning to rid themselves. Our students still go to London rather than to the Continent, and still retain the ideals of British practice, in which the art of men like John Cheyne, Graves, Stokes, Bright, Addison, and Latham prevails, rather than the drier, colder scientific methods of the French and German schools; though I trust that in thus exalting the art I am not misunderstood as depreciating the science of our calling. I may, however, point out, before I change the subject, that most of the great discoveries which have lessened the suffering of mankind have been, until recent years, credited to our race. Sydenham introduced quinine for malaria; Jenner, vaccination for smallpox; Simpson and Morton, general anaesthesia; and Lister, antiseptics in surgery; and to mention a few names from the British medical service I may remind you of the work of Sir Ronald

Ross in connection with the rôle of the mosquito in the propagation of disease; of Sir David Bruce in connection with Mediterranean fever and the work which he has not yet quite completed upon the sleeping sickness of Central Africa; and not least of all the services of our friend and guest, Sir William Leishman, in connection with kala-azar and with typhoid inoculation.

The maxim of Sir Astley Cooper still reflects the attitude of the majority of our profession: "Profound erudition is good for a man of means, and practical knowledge for the physician and surgeon."

But to turn from these more civil and collegiate aspects of our subject, I should like to point out to you that the older medical officers still living in the British medical service, or retired from it, began their careers in the Army under auspices far different from those under which our experience began. The first bearer company organized in the British Army was made up from a number of men from the regiments of the Transvaal Field Force during the Sekukuni Campaign of 1879 by Surgeon-Major James Hector, M.D. (Army Medical Department), who commanded the company. The expedition was under the command of General Sir Garnet Wolseley, and Surgeon-Major Hector's account of it may be read in the *Journal of the Royal Army Medical Corps*, May, 1911. The medical personnel of those days was known as the Army Hospital Corps, some of whom served with this bearer company. In the year 1879 I matriculated at the University of Toronto, and the fact serves to impress vividly upon my mind at least the recency of the final break with the old regimental system of medical service. The second bearer company of the British Army was sent from Britain to South Africa for service during the Transvaal War of 1880 and 1881, under the command of Surgeon-Major William Johnston. Of that first company, Colonel Stanley, then Secretary of State for War, said in the House of Commons that the employment of the bearer company was "a marked feature in field organization," and the sending two years later from Britain of the first fully equipped and trained bearer company may be truly said to mark an important step in the evolution of the present Army Medical Service, which owes its present organization to the work of the Commission on the Medical Services in the late war in South Africa.

I came too early into the Service to have command of a field ambulance, for the present No. 10 Field Ambulance is the successor of my old command, No. 4 Bearer Company.

To make a long jump backwards in the history of army medical services, I may remind you that practically all medical assistance in early ages was that given to the armies of the ancient races. Homer's two doctors who served with the Greeks before Troy were Machaon and Podaleirius, one of whom, Machaon, is described in the eleventh book of the "Iliad" as being in need of medical aid, having been badly wounded himself. The same book described the treatment of the wounded Eurypylus by Patroclus, who cuts an arrow from his thigh with a knife, washes off the black blood, and puts bitter herbs on the wound, which stop the flow of blood.

These allusions were kindly given me again the other day by my former professor and good friend, the Principal of University College, Toronto. He further remarks in characteristic fashion upon the description given, in the same book, of Machaon, when wounded, drinking a "posset" of Pramnian wine with cheese grated into it and barley meal sprinkled over it, which refreshed him, but which Plato criticizes as justifiable for a wounded man only on the theory that if he could stand that he could stand anything and deserved to recover. The drink was given by Nestor's servant and not by a doctor, but the patient who took it was a doctor, and a wounded doctor at that, whence Plato's scoffs.

The Levitical sanitary regulations of the Jews, with regard, for instance, to the control of leprosy, and more particularly the regulations for their armies

in the field, are beautiful examples of long clinical experience crystallized into practical form, and if carried out in our own day would go far to maintain the health of armies. Particularly effective are their regulations with regard to the disposal of excreta and the prevention of contagion by means of discharges from wounds or sores. Of course, in these early days, when disease was looked on as an act of God, as something which was to be expected and must be borne, but which was impossible to prevent, there was practically no army medical service. Later on, if a commander were careful, he would engage a leech or barber-surgeon, or a few physicians or apothecaries, but such provision was entirely on his own initiative. Sick and wounded were handed over to the civic authorities or left in villages to die or get well if they could. Arrangements of this rudimentary sort appear first in European armies early in the eighteenth century. Historians of the campaigns of Marlborough say that in respect of the medical care of his armies he was far in advance of his times.

Most of the great names in medicine and surgery, down to the days of Ambroise Paré, in 1500, are associated with the service of soldiers in the field. About 1600 the barber-surgeon is heard of. He was attached to a regiment and was allowed the privilege of shaving the soldiers. His pay was the not excessive sum of four pence per day.

About 1700 surgeons and assistant surgeons were appointed to regiments and received a commission from the King. They were generally called Mister, and had no rank or position whatever. In the Crimean War, 1854-56, there was nothing beyond the regimental doctor: no adequate hospital organization and no sanitation, so that frightful disasters, due more to sickness than to wounds, befell the army, not through the fault of the medical officers but through the fault of the regulations under which they had to work. General military hospitals of course were improvised, but there were buried in the military burying grounds before Sebastopol, and at Scutari, not less than 22,000 British soldiers who died of disease, not of wounds, and most of it preventible. It is interesting to note that the reformation brought about by the force of public opinion was very much helped, if not mainly initiated, by the efforts of a nursing sister, Florence Nightingale, "the Lady with the Lamp," who died past ninety years of age only about three years ago.

The whole episode of the Crimean War is melancholy reading so far as the medical service, at least, is concerned. Speaking of the circumstances immediately preceding the outbreak of that war, the Crystal Palace had been built, and one might almost say consecrated, to the cause of perpetual peace in 1851. A large share of the British Press and people were singing pæans of peace, as if by invoking the genius of commerce and industry and money-making and self-interest, war had been perpetually banished from this world. One hears of late again, as if it were new, much the same sort of thing from Messrs. Carnegie, Angell and Company. The Duke of Wellington, when he ventured to protest and propose radical army reforms, was met almost by a howl from Press and people, who were demanding why this old dotard, befogged in his soldiership, should thus seek to shatter their rosy dreams, and his schemes of reform in the Army were delayed almost to the year 1870. Within three years of the opening of the Crystal Palace the Crimean War had begun, and you well know how, in spite of brilliant feats of arms, defective organization and antiquated regulations resulted in hideous suffering and quite unnecessary deaths. In the *Journal of the Royal Army Medical Corps* for January of this year, beginning at page 88, there is a reprint of a lecture delivered on January 18th, 1884, at the Royal United Services Institution by (the then) Surgeon-Major G. H. J. Evatt, A.M.D. I recommend a careful reading of this paper to all of you who have not yet seen it. From this paper I glean the following remarks.

The medical service in the army which embarked for the Crimea in 1854

consisted of a grouping of medical officers, "commissioned by fours, threes or singly to every battalion or battery. These officers wore the regimental uniform, were under the command of the battalion commander, and administered the regimental or battalion hospitals under the control and on the responsibility of the military commander of each unit. In every garrison there were a series of small battalion, regimental, or battery hospitals, each entirely distinct and separate, where the sick of each battery or battalion were treated by their own battery or battalion doctor. The nursing was done by a regimental hospital sergeant and a certain number of privates of each battalion, who were placed by the commanding officer for duty in the wards. The hospital sergeant as the executive agent of the military commander was to maintain discipline in the hospital, and to see that the medical officer's orders were carried out, for the army surgeon himself had no definite power of command, either over sergeant, orderlies, or patients, but referred all questions of the kind to the military commander. If a regimental doctor went sick or went on leave, a staff doctor, of which there were some sixty or seventy in the service, was detailed to take the sick man's place, simply as a locum tenens. For every detail of work in the regimental hospital, the officer commanding the regiment was officially responsible, save and except only medical treatment. The discipline was done by the colonel, orders were issued by the adjutant, the quartermaster had the transport and stores work, and the battalion orderlies did the nursing. There were not in England, in 1854, more than three, if so many, general hospitals. Whatever size the hospitals were, they were purely regimental. The doctors wore the regimental uniform and no authority existed for moving them from their battalions, or if they were moved no power existed to move the sergeants and nursing orderlies, men quite as important in their way as the doctors themselves."

"Take the ambulance system of this Army of 1854 in the field; go to the hillside of the Alma on the evening of September 20th, 1854, and see how it worked there. The total of regimental army doctors and of regimental orderlies with the army corps that took part in the fight that day was ample, and sufficient, under better organization, to have done well by the comparatively few wounded. There was no attempt at ambulance organization. The battalion surgeons of the regiments under fire, aided by the bandsmen, carried away, or tried to carry away, the battalion wounded. There were no trained regimental bearers, no bearer companies, no field hospitals, no ambulances, no hospital corps, no equipped hospital ships, and behind all was the chaos of Scutari, with its 'dreary corridors of pain.' I will ask you to put yourself in the place of the battalion surgeon of September, 1854, as he stood that night on the hillside of the Alma, and saw his friends and comrades lying on the ground with none to help them. No ambulances to carry them, no hospital corps to nurse them, the bare 'tween-decks of the empty transport to be their hospital ships and trusting to the sailors of the fleet for the hammocks they used as stretchers to carry them to their ships. I will ask you to think of Thomson, of the 44th Regiment, left on that battlefield with 400 wounded Russians, with no attendant save his soldier servant, and say was it possible for us to stand by so fatal a system."

The result of the state of affairs so trenchantly described was that public opinion, as again after the South African War, demanded a full inquiry into the medical experiences, and in 1857-58, Sydney Herbert's Commission made a few unimportant, not radical, changes which had but little real effect upon war efficiency. "It gave the doctors rank and pay; it founded the germ of a hospital corps; it developed a kind of hospital commissariat; it formed two general hospitals, supposed to be training schools for war work, but it still stood by the fatal error of maintaining the regimental hospital and the regimental doctors in peace." In spite of the incompleteness of this work, how-

ever, Lord Herbert's Commission must be recognized as, at least, the commencement and occasion of a great and necessary improvement in organization which followed. The Civil War of the United States from 1861 to 1866, the campaigns of Sadowa in 1867, and the disaster of Sedan and other great battles of the Franco-Prussian War in 1871, made effective contributions to the desired end. In March, 1873, changes in the British Army Act began, and were followed by further changes in 1876 and 1877, by which important forward steps were taken. The Army Medical Department was formed in 1873 by removing the medical officers, staff and regimental, from the various regiments in which they were commissioned and unifying them into one body. Regimental hospitals were abolished and replaced by central garrison hospitals. The previously scattered groups of nursing orderlies were gathered up into the Army Hospital Corps and the medical officers were made responsible for the management and control of their hospitals, both in peace and in war. In 1877 the command of the hospital corps was given over to the medical officers. Under the war scheme of 1873 organization the regimental stretcher-bearers first appeared, sixteen men trained to ambulance work to assist the surgeon in giving first aid in the field. Sick and wounded are now sent to one of the field hospitals of the division.

A very important step towards efficiency was taken after the first Egyptian campaign under Lord Wolseley in 1882. Prior to this the Corps of Orderlies had been commanded by combatant, not medical officers. These combatant officers became quartermasters in the new organization; the historic origin of the fact that our quartermasters are not medical men. The excellent position in which we now find ourselves in all matters of status, rank, pay, and promotion has slowly and only recently been brought about; for instance, our disciplinary powers for officers, attendants, and patients, such as we have for the non-commissioned officers and men of our own units, were granted by Royal Warrant only of August 11th, 1877. The captains and lieutenants of orderlies, the old Corps of Orderlies, became quartermasters from July 1st, 1881.

The status of the medical service as regards military boards, so long unsatisfactory, has been finally determined by the appearance of Army Order 209 of 1912, in which all reference to the system under which a medical officer "attended" instead of being a member of a Board finally disappeared from the "King's Regulations."

Before the formation of the Royal Army Medical Corps in Great Britain, upon which our Army Medical Corps is modelled, medical officers were given compound titles, such as surgeon-lieutenant, surgeon-captain, surgeon-major, etc., a system only a few years ago discarded in Canada by G.O. 62, 1899, for A.M.C., and by G.O. 98, 1904, for regimental medical officers. The double title is still retained in the case of the medical officers of the King's Household troops as a distinctive designation. The story is told of a young subaltern who addressed a surgeon-major as follows: "I do not know how to address you. I do not know whether you should be called major, surgeon-major, mister, or doctor. Which is right?" The reply was: "On parade you will address me as Sir, off parade you will not speak to me at all."

In 1899 I was in camp at Ross in Herefordshire with the fifth battalion of the "Royal Warwicks," and I remember the officers telling me that they liked the old regimental doctor. He was a surgeon lieutenant-colonel, was called "Pa" by the subalterns, and was considered a good judge of wine.

In the Journal of the Royal Army Medical Corps, November, 1911, there is a very interesting biographical sketch of an old inspector-general of military hospitals, Gabriel Rice Redmond. He was an Irishman, born in 1763 in Wexford, and after a brilliant career in Trinity College, Dublin, commenced in 1785 or 1786, obtained his degree of M.D., and was gazetted in 1794 surgeon to the 126th Regiment of Foot. In 1795 he became surgeon to the 28th Foot, now the first battalion of the Gloucestershire Regiment. The regiment was then

stationed in Ireland, but shortly after in the same year embarked for Quebec only to be recalled and sent to the West Indies. One may get some idea of the difficulties of sea transport in those days from Redmond's diary. The transports conveying the troops met with such weather that the headquarters and six companies of the regiment were driven back to England, where they remained till the autumn of 1796, embarking then for Gibraltar. The four companies of the regiment with which Surgeon Redmond had embarked reached the West Indies, and were attached to the 14th Regiment and took part in the capture of St. Lucia, but subsequently joined their headquarters at Gibraltar, and in 1798 formed part of the force which captured Minorca. Four years later, in 1802, Redmond was obliged to return to England on account of ill-health. In 1803 he was given the rank of assistant inspector of hospitals, and served at home in that appointment until 1807, when he accompanied the British force under General Whitelock in the expedition against the Argentine. He appears in reports as inspector of hospitals to the troops in Monte Video in 1807. Returning in 1809 to England he was ordered in 1812 to Quebec, there to report himself to Sir George Prevost, Governor-General of Canada. A few extracts from his diary have much local interest, and cast some light upon the state of the medical department of the army in Canada just one hundred years ago.

DIARY OF INSPECTOR REDMOND, 1812-13.

"Journal of occurrences from August 27th, 1812. This evening I embarked with Phyllis, Anne" (his wife and daughter—Ed.) "and a man and maid-servant, on board the 'Coleworth,' Victualler, No. 31, . . . Master, at Portsmouth for Quebec, where we arrived after a tedious and stormy passage on October 18th. We had nearly been lost in the Gulph of St. Lawrence in a gale of wind in consequence of the wind suddenly taking the ship aback at twelve o'clock at night, and if all hands had not turned out quickly, the ship would have gone to the bottom. The dead-lights were in nearly the whole of the passage."

On October 19th he reported his arrival to Major-General Glasgow, commanding the garrison of Quebec. On October 24th he received orders to proceed at once to Montreal, where Sir George Prevost, the Governor-General, then was. The journey of 180 miles had to be travelled by stage coach over very indifferent roads; it occupied two days and was exceedingly uncomfortable. On reporting himself to the Governor-General, he was ordered to proceed to Upper Canada at once to report on the state of the hospitals and medical department. Some of the notes made by Inspector Redmond during his journey are worth reproducing to show the condition of affairs existing at that time.

River Raisin: "Here Colonel McMillen commands, and with him 300 of the Glengarry Militia. There was no hospital nor any medicines, and the Colonel complained that his men had not blankets."

Brookville (*sic*) (for Brockville): "There were only sixty men, 1st County Leeds Militia, commanded by Colonel Brackenridge, stationed at Brookville. Mr. Hepill, the surgeon, was in want of every article of medicine, etc., and the sick go to their own homes whenever they like."

At Kingston he embarked on the "Earl Moira," sloop of war, for Niagara; after proceeding ten leagues the ship anchored for the night, and next day, the wind being foul, returned to Kingston. He then proceeded by road, but the guide lost his way, and for a considerable time they wandered about in a wood with heavy rain falling all the time. The party finally managed to find an Indian hut in which they passed the night. Next morning they again lost their way in the wood, but managed to secure the services of an Indian boy who showed them the way. At York he inspected the hospital and found it to be "a miserable one. It was an old condemned house, and could not hold more than twelve patients."

"Mr. Lee (the surgeon) had few medical or purveyor's stores, particularly articles for wounded men."

(November) 14th, Fort George, or Niagara: "Inspected the hospitals and barracks again, and went round the quarters of the Militia with Colonel Bishop, inspecting Field Officer; found them all very much out of repair, dirty, and the windows broken." "Arranged with Colonel Bishop that a steady non-commissioned officer from each Militia Corps was to collect the sick men at ten o'clock every morning and take them to the staff surgeon."

(November) 15th. . . . "The Militia sergeants were not able to collect the sick. Those that gave in their names were gone home, some without leave."

(November) 19th: "No possibility of getting to Kingston by sea as the ships were chased by the American squadron beyond the Ducks Islands, and will not venture out of Kingston Roads again, as it is time to lay them up for the winter, and until the frost sets in so that we can travel in sleighs, we must remain at York."

After a prolonged tour, amid much discomfort due to the cold weather, the bad state of the roads, and accommodation available in roadside inns, and further increased by an inflammation of one leg and a fracture of two ribs resulting from a fall, Inspector Redmond arrived back in Montreal on December 2nd, 1812.

He proceeded by sleigh to Quebec and seems to have had an unpleasant journey to judge by the notes in his diary, of which the following is a fair example: "We had a dreadful day's journey to-day. Our sleigh horse got tired and we did not get to Machiche until late at night. Six upsets to-day. My side at times gave much pain." While in Quebec Inspector Redmond furnished a report on the state of the hospitals in Upper and Lower Canada. He described them all as "miserably bad," and states that the medical and purveyor's stores were very deficient, most of the latter having been in use during the last American war (i.e., the Rebellion). He hired an office and a clerk, and busied himself in making out requisitions and looking over returns. He complains that all the returns furnished by the regimental surgeons were wrongly made out, and that he had to send them all back for correction, a proceeding which must have occupied some time considering the difficulties of communication at that time.

On February 7th, 1813, he became very ill with symptoms of some liver trouble. The attack lasted for three weeks and left him in such a poor state of health that a medical board recommended him to proceed to England as soon as the river opened. During this illness his wife gave birth to a son.

The diary contains many pages full of shrewd observations on the condition of Canada, its people, crops, climate, etc.

Another local touch of interest to us in Toronto is the career of a very famous surgeon in the United States Army, William Beaumont, who was serving as a regimental surgeon at Plattsburg in 1812. His regiment was one of those which took part in the assault upon York when the American forces burned the village, as it then was, and drove out the British troops, who retreated by the Kingston road. You will remember the devastation that was wrought upon the leading forces, when, as the British troops retreated, the magazine of the fort, standing then near the foot of the present Bathurst Street, was blown up, either by accident or design, as the last British troops left it and the Americans swarmed in. Beaumont leaves a graphic account of his thirty-six hours of "cutting and slashing without rest or food," as over 300 of his troops were mangled and maimed. All is fair in war, but he leaves on record some very forceful remarks upon what he considered great inhumanity. It was he who afterwards, in the isolation of a little American army post at Mackinaw, at the mouth of Lake Michigan, conducted upon Alexis St. Martin, the French Canadian voyageur, who died at the age of eighty-three in the Parish of St.

Thomas de Joliette, south of Montreal, so recently as June 24th, 1880, the first series of exact scientific observations upon digestion in the stomach, made with a patience and accuracy which amazed and delighted the scientists of France, Germany, Britain, and the whole medical world.

Before closing, and without enlarging upon the different subjects which I suggest, let me remind you of three or four of the main phases of a medical officer's activities. The R.A.M.C. Training lays down, as you all know, four main duties of the medical officer as follows:—

- (1) The maintenance of the Army's health (sanitation).
- (2) The care of the sick and wounded (the work of the physician and surgeon as understood in civil life).
- (3) The evacuation of the sick and wounded (in which a wide military knowledge is necessary, particularly of the duties of the Army Service Corps, Transport).
- (4) Lastly, the replenishment of his own supplies (Army Service Corps' Supply), to which may be added the military care, discipline, and training of his own rank and file.

To fulfil these varied duties the medical officer must be, not only a good, well-trained soldier, familiar with the duties of the other services in the Army and capable of assuming the same effective military control of those beneath him in the service as is required of any combatant officer, but he must be also, not only a capable physician and surgeon as in civil life, but a trained and capable sanitarian. The problems of the public health officer, which are almost as a sealed book to most of us in civil life, must be to him familiar. Examples of the immense importance of this phase of his work occur at once to all of us. The brilliant success of the United States medical service in connection with the building of the Panama Canal is familiar in a general way to all of us. This medical service alone made possible the construction of a work in which the French failed with such disastrous loss both of life and money, only forty years ago. We are delighted to have upon our programme for this meeting a paper upon this subject from one of the latest joined officers of the Corps, Lieutenant J. A. Amyot.

One of the most striking instances of what modern sanitation means is shown by a little tin sign which I saw a few months ago on the mantelshelf in the private room of Colonel Melville, R.A.M.C., then Professor of Hygiene in the R.A.M. College in Millbank, London. He had carefully mounted it in a little oak frame. The weather-beaten piece of tin, originally painted black, bearing on it the familiar block letters in white lead, which the Royal Engineers have put up in all quarters of the globe, had been removed and sent to him by a R.A.M.C. officer serving in India, from a door in some old cantonments at Ahmednagar which were being dismantled. It bears the legend: "No. 23, Cook-house, Lavatory and Privy." Such is the advance of sanitation in the Army Medical Service within the last thirty or forty years.

I close with the remark that we are proud to belong to a British service, and one which is at least the equal in its own sphere of any service or department in that right little Army of that tight little Island which we are determined for all time to come to call still and always our Mother.



The Sanitary Inspectors' Association of Western Canada

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SANITATION IN THE EARLY DAYS OF WINNIPEG

By E. MARSTON,

Secretary of the Health Department, Winnipeg, Man.

Read before the Winnipeg members.

I HAVE been asked to give my recollections of sanitation in the early days of Winnipeg. I arrived here in the fall of 1870 from Toronto by way of Chicago and St. Paul. In the forty-three years that have passed since the party of which I was a member landed from the boat and pitched our camp at a place on the river bank not far up, I should say, from what is now the foot of James Street, the little Red River settlement which I then saw for the first time has grown to be a great and populous city. But if in my desire to linger over the early days, exercising the old-timer's privilege of garrulous reminiscence, I were to undertake to make my recollections of sanitary methods begin with my arrival, the first chapter of my sanitary recollections would have to be like the celebrated chapter on snakes in a book about Ireland, which often referred to. That chapter is as follows: "There are no snakes in Ireland." There were no sanitary methods in the Red River settlement out of which the city of Winnipeg has grown.

When I arrived the populace was about 300. Only a few months before my arrival the expedition under Col. Wolseley had preceded me by way of the fur traders' route from Fort William via the Lake of the Woods, the Winnipeg River, Lake Winnipeg and the Red River; and peace

and good order having been established, had departed again. Fort Garry, as we saw it from our camp, stood on the level prairie looking like a ship on the ocean, the flag flying from its flagstaff.

I have said that there were no sanitary methods in operation in the settlement, which consisted then mainly of houses along what is now Main Street. But while there were no regular sanitary methods in the sense in which we now understand the term, the two greatest and oldest sanitary methods which go forward independently of human arrangements—and are indeed more often checked and interfered with and seriously obstructed by human arrangements, especially with the growth of crowded quarters in the great centres of population—these two most important of cleansing agencies to which I am referring, namely, the sunlight and the wind, had free play to do their beneficial work. The whole settlement lay open to the sun and the wind.

My stay in Winnipeg after my first arrival was very brief, in fact, a few days only, as I had engaged to go with a survey party to the southeastern part of the new-fledged Province of Manitoba. I returned to Winnipeg a year later, in the fall of 1871, to find the population increased to six or seven hundred. The hotel accommodation was decidedly limited. There were only two or three hos-

telries for the accommodation of travelers, and their arrangements were indeed primitive in every respect. The discomforts in these houses of entertainment were increased by the overcrowding resulting from the gradual inflow of newcomers, surveyors and their working staffs. The winter set in very severely, and with the overcrowding, the bad arrangements, and the absence of any proper sanitation, an epidemic of typhoid broke out. At one hotel, the Garrett House on Portage Avenue East, there were some eighteen or twenty cases. The proprietor, to convince me of his inability to take me in, showed me over the house. In some of the rooms there were three or four beds, all occupied by typhoid sufferers. In those days there were neither sewers or waterworks. Slops of every description were thrown out of the back door, and you may imagine how shocking matters were when the hot weather arrived.

In the fall of 1872, two years after my arrival, there was a count made of the population. It showed that on the first day of November, 1872, there were 1,467 people here. Of this number 1,019 were males and 448 females, a disparity noticeable at first in most western towns, and due of course to the fact that a preponderating number of the newcomers were young men, and that those who had families came on alone to secure homes before bringing their families out to this new country.

The hotels in those days had their own water carts, which hauled water from the Red River and emptied it into barrels without covers at the back doors of the hotels. The other houses in the settlement depended on individuals who made it a business to draw water from the river in the same way, and the water supplies were kept in barrels at the kitchen door of the house in the same insanitary manner as at the hotels. A well-known figure among the water carriers was old John Irvine. There is a photograph of him in existence showing his Red River cart drawn by an ox and labelled "Winnipeg's First Waterworks."

In 1874 we had another outbreak of typhoid. This also was severe. I unfortunately was one of its victims, though

indeed I should not say unfortunately, since, if I had not been laid on my back by that attack of typhoid I would not now be here this evening giving you these rambling reminiscences of the early days of our city. I had just returned from a journey across the continent from the north-west angle of the Lake of the Woods to the Rocky Mountains, with the International Boundary Commission, which set up the boundary pillars half a mile apart which mark the international line between this country and the United States. That Commission was a military body, and I was engaged as one of the scouts. Those were days when there were hostile Indians on the plains. Several of my chums among the scouts and myself had signed to join General Custer at Fort Abraham Lincoln and go with him on the expedition against "Sitting Bull." Four of us came back to visit Winnipeg before going to Fort Abraham Lincoln; and of the four, three of us took typhoid here. Two of the three died, and I survived. If I had not been prevented by that attack of typhoid I would have undoubtedly gone with Custer's expedition, and in all human probability would have been with him in the massacre. Last year I read in the papers that the United States Government had taken the bones of Custer and his men who were killed in that terrible affair and re-interred them in the great national military cemetery on the Potomac near Washington. If the Winnipeg of 1874 had had as efficient sanitary methods as the Winnipeg of 1914 I doubt not but that my bones would be now reposing by the Potomac.

To return, however, from this excursion into the realm of Might-Have-Been to my recollections of the actual condition of Winnipeg forty years ago, I might say that, in one respect, I should seriously qualify what I have said already in regard to the part played by fresh air as a sanitary agent in the early decades of our city. The custom used to be, as you know, that at the beginning of winter, houses were made as air tight as possible against the cold, the ideal aim apparently being as complete a lack of ventilation as could be obtained. You remember what Hamlet says in his moralizings over Yorick's skull in the churchyard—

"Imperious Caesar, dead and turn'd to clay,
Might stop a hole to keep the wind away;
O, that that earth, which kept the world
in awe,
Should patch a wall to expel the winter's
flaw!"

Certainly in the early days in Winnipeg all the chinks were stopped to keep the wind away, and to expel the winter's flaw. Better ideas prevail now, when we sleep with our windows open to some extent, at any rate, even in cold weather, while in the summer time the practice of sleeping in the open air has increased immensely of recent years, with the most beneficial results to health. It is only a few years since the first few sleeping porches were seen in Winnipeg; now they are common. When the first ones appeared we used to say, "There must be a sufferer from tuberculosis in that house who is endeavoring to overcome the disease by the fresh air treatment." We never dream of saying such a thing now.

But to get back again on the track of my recollections of the early days, I might mention it as a fact of interest that the first installation of a house water service on modern lines in this part of the world was made in 1876 by Archbishop Tache, who had a water service put into the palace of St. Boniface from the Red River, the water being pumped by a donkey engine to a large tank at the top of the house. The river water was muddy of course, especially in the spring when the ice plowed up the banks; but then, on the other hand, it was, of course, not contaminated as it is now. It was necessary to let it stand to clear itself, and every little while you had to have the sediment in the bottom of your water barrels cleaned out. Early in the history of the city, the civic authorities sunk wells and erected public pumps at various street corners. Some of these were standing until a few years ago. The first city waterworks system was put in on the Assiniboine at Armstrong's Point by a private company, which the city afterwards bought out. But I won't attempt to bore you with a chronology of the city's sanitary progress, giving you facts and dates, such as that the first sewer was put down in 1876 along Main Street, from Portage Avenue to

Bannatyne and thence to the Red River. The first city health officer was George Kerr, and was succeeded by Dr. Phillips. Among the doctors in the early days whom I might mention were Dr. Codd, Dr. Bird and the Hon. Dr. O'Donnel, the latter of whom was a member of the first Government this Province had. In fact he was a member of the Legislative Council, a sort of House of Lords, with which Manitoba started out, its membership being for life. The extraordinary thing about it is that in a year or two it abolished itself voluntarily.

In May, 1882, there was a bad outbreak of smallpox. A family by the name of Gingras, from St. Joe, Dakota, visited St. Boniface. Smallpox at that date existed to some extent amongst the Indians and Half-Breeds. The Gingras family were infected, and they in turn spread the contagion amongst these whom they visited. I have a recollection of about a score of deaths.

One family in St. Norbert, named Parisien, were entirely wiped out (seven of them). Another family in the same village, named Chartrand, lost five of its members. The Gingras family aforementioned, upon their return to St. Joe lost four of their number. Seven others of St. Boniface also died—Henry Marcellaise, William Corriere, Louis Hebert, a scholar in the College, also Rev. Father Forget, the Principal; a Mrs. Larocque, Alex. Kitson and his brother William Kitson. Alex. Kitson died from haemorrhagic smallpox.

There was no quarantine and no disinfection, and you will be surprised to know that hundreds visited the house and viewed the corpse, and consequently many of the visitors were infected. Some infection was carried to Gimli and other points.

After the damage was done, the Local Government ordered all its civil servants to be vaccinated, and those of the citizens who wished so.

The first Catholic cemetery in the early days was situated on Notre Dame West, probably where Notre Dame Park now is.

About the year 1884 those in charge of cemetery matters purchased the present St. Mary's site, and all the bodies were transferred to the latter place. The disinterments were made during day-

light, and conveyed to the new site during the night.

I do not know what precautions were taken, or what disinfectants were used. But, I can assure you, it was a malodorous job, and especially for the few who lived on the route.

In 1888 there was an outbreak of diphtheria, in which I participated. Needless to say, we didn't placard the houses in those days, nor disinfect, as I know from my own experience.

I am afraid that I have succeeded only in giving you fragmentary and disconnected recollections of the sanitation of our city in its early years. There has been a steady advance in the introduction of improved methods, until we have now a contrast between our present sanitary methods and the first beginnings of sanitary methods in Winnipeg—like the

contrast between the asphalt streets, electrically lighted, with their street cars, taxicabs and automobiles on the one hand, and, on the other hand, the old muddy roads with the Red River carts drawn by oxen.

When we consider how constant and wonderful the advance is—how great the progress which is being made in grappling with all the problems of fighting and preventing disease, and securing purity in the food supplies, and improving all the conditions of life, we can hardly doubt the contrast between the conditions that will prevail forty years from now (in 1954), and the conditions prevailing now will be no less marked than the contrast between our present advanced methods and the conditions that prevailed forty years ago in the Winnipeg of 1874.

MONTHLY JOTTINGS

The Secretary-Treasurer desires to remind the members that annual subscriptions fell due on 1st January. In order that members may receive their copy of Public Health Journal it will be necessary to remit subscriptions early.

Mr. P. B. Tustin, Hon. Secretary, Manitoba Branch of Royal Sanitary Institute, has received by cable the results of the recent examination for Inspectors of Nuisances. The following six candidates presented themselves and all were successful: George Hanby, John W. Stewart, Ernest J. Saville, Charles J. Douglass, Frederick C. Austin and William J. Bacon, all of Winnipeg.



